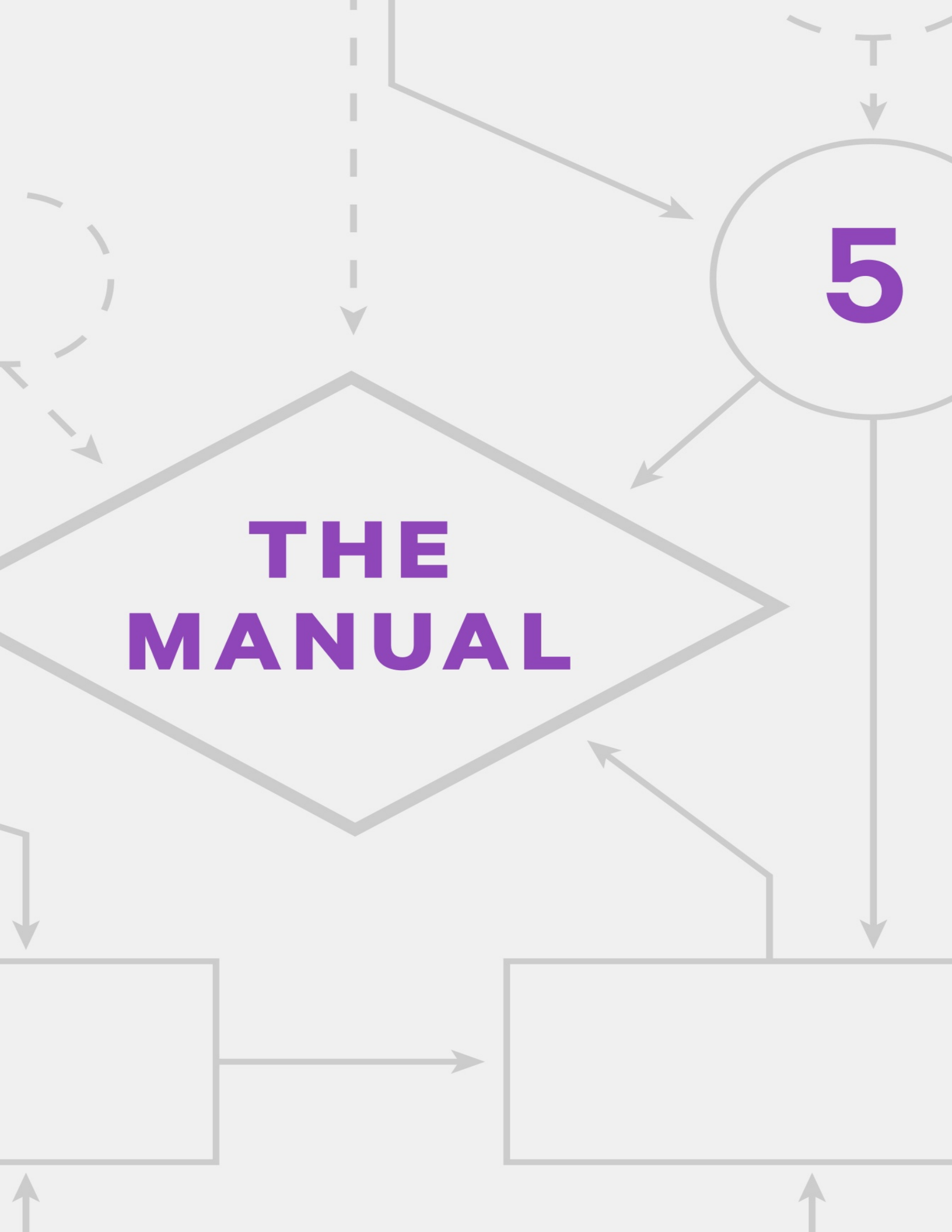




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WE ARE WHAT WE BUILD

ERIC MEYER

My wife Kat and I spent almost every moment of Saturday, June 7, 2014, lying in bed with our middle child Rebecca, who turned six years old at 7:24 that morning and died shortly before 7:00 that evening.

There is no way I can communicate what that is like to someone who hasn't been through it. But I had tried, over and over, through blog posts and tweets. I had used the tools at my disposal to try to help people who knew me, or even people who merely knew *of* me, to understand even a little bit of what we were going through. From the day after Rebecca's cancer was discovered until the days after it finally crushed her brain past the point of survival, I had shared what parts of her story and our story I could bear to write.

There were many reasons I did this—some selfish, some selfless, some unexamined. I wrote about why I wrote, at one point. ¹ Through it all, I stayed open to the world. I shared what I was learning about coping with a child's illness, the travails of uncertainty and bureaucratic error, the surges and crushing of hope. I laid bare some of the most personal moments of my life, even as I kept silent about many others.

When I put up the memorial post for Rebecca, ² I included an invitation that someone had suggested: that anyone who

felt comfortable wearing purple to Rebecca's funeral should do so. This is perhaps a little unusual, since the dress custom for funerals tends to be "black and formal." But honestly, a room of people all wearing black would have made Rebecca roll her eyes in boredom.

So I put it in there, as a message of sorts to those who were coming to the ceremony, that this was not just a moment of mourning but also a remembrance and a tribute to Rebecca. Online, a number of people announced their intention to change their Twitter avatars to purple, in sympathy and solidarity. The hashtag #663399becca was coined, combining Rebecca's name with the CSS color code for a very nice shade of purple. Matt Robin proposed that the web community get it trending on the day of the funeral. ³

Jeffrey Zeldman, my friend and business partner at An Event Apart, wrote a post supporting and promoting the idea. ⁴ Jeffrey has a significant online presence, and that post, along with his tweeting about it, really helped the idea take off.

The day of the funeral, my Twitter feed was a wall of purple avatars, and I believe the hashtag did indeed trend, at least within the US. At a certain point, I had to completely turn off Twitter notifications, because my phone was going crazy. Not that I was spending a lot of time looking at my phone that day, but I wanted to preserve the battery for necessities like phone calls.

Somewhere in the middle of all that, a suggestion was made to honor Rebecca by adding to CSS a named color

equivalent to #663399.⁵ The idea rapidly gained widespread support, not just from the community but also the browser vendors, and by June 21 the Working Group had officially accepted the proposal.⁶

And so, in a corner of the language I dedicated so much of my life to understanding and explaining, there is a memorial to my little girl: the named color “rebeccapurple.”

This was quite possibly the last thing I expected. When the proposal arose, I could barely make myself think, let alone objectively evaluate the merits of the proposal, which is why I stated that I was deeply honored by the proposal and would accept whatever decision the Working Group came to, pro or con.⁷ (I meant it, too. If the WG had declined to add “rebeccapurple” to CSS, I would have blogged in support of their decision.) I couldn’t really think about it in any coherent way, then or in the immediate aftermath. Besides adding the color to Rebecca’s memorial page on my website, I didn’t really think about it for a few months.

What pushed me to think about it was Gamergate.

Whatever you might think of Gamergate—and there’s a lot to think about it—I believe I can say at least this much without stepping on any land mines: it was when actor Adam Baldwin coined the hashtag #gamergate, and greatly boosted the signal on two videos made by people critical of Zoe Quinn, that the whole thing blew up into what we now think of as Gamergate, no hashtag.

In the process, there were threats—vicious, horrible threats—against not just Zoe Quinn, but also Brianna Wu and Anita Sarkeesian. All three women had experienced such threats in the past, but not with the same frequency or intensity that was seen during Gamergate.

I wasn't even that deep into the situation—this was August and September 2014, when I was still pretty grief-stricken, and at any rate I'm no more than an occasional gamer—and I was sickened and horrified by so many of the things I saw. I cannot for an instant imagine what it must have been like to be at the focus of it all, or even near to the focus.

As my brain often does when confronted with horror, I retreated to analysis, hoping to draw something useful and constructive out of what seemed like a pointlessly destructive situation. It was an instinct that had helped me through everything that happened with Rebecca, and it helped me cope with the nauseating details I saw before me.

From that analytic distance, I realized I was seeing something structurally similar to the [#663399becca](#) campaign, but with such a different outcome.

In both cases, a situation that had already existed reached a sort of tipping point with the coining of a hashtag and a signal boost from a prominent personality. In response, groups of people organized to act.

With [#663399becca](#), a collective tribute gave way to a formal, digital memorial. With [#gamergate](#), a collective outrage gave way to terrible, real-world consequences.

We can look at these examples and say that the difference in outcome is the difference in input—that starting with positive intent leads to positive outcomes, and negative intent leads to negative outcomes. That’s certainly true. But it’s not the whole truth.

Some say that the medium in which these things happened is like a road, neutral to its uses—but roads are not neutral spaces, and neither is the internet.

While a ribbon of asphalt is neutral to its uses, we are not neutral to the uses of that asphalt. We decide where the road should go, which includes deciding who will have access to that road and who will not. We determine speed limits, caution areas, rules of the road. We don’t let people drive on whatever side of the road they feel like, or endanger pedestrians and other drivers. We establish laws and enforcement mechanisms. We even require licensing of the people who drive, to try to make sure that they understand at least a bare minimum of the rules before we allow them to use the road.

This is not an argument that we should license internet use. It’s pointing out that roads are not nearly as neutral as we all too often pretend. We set much lower speed limits around schools; we paint lines to indicate where passing is permitted and where it is not; we hire police officers and judges to penalize those who disregard the rules. Nothing about a road is neutral except for the raw material itself.

For that matter, almost nothing we do online these days is neutral. In the early days of the web, we were excited just to be able to look up some information and follow links from page to page—web surfing was a real thing back then, in the pre-search-engine era. Then we were thrilled to have great maps and the ability to have goods shipped to our houses. And back then, we were still trying to figure out what to share, and how and when to share it.

Now we share ourselves freely, continuously, one tidbit at a time but at a rapid pace. Social networks have emerged, and we share our thoughts and feelings with the world almost effortlessly, all the old hurdles of hosting and software installation outsourced to companies dedicated to making it simple. The web lets us do this without regard to time and distance, allows us to connect with people we otherwise would never have known existed. This should come as no surprise: humans have always longed to communicate, and most of all to be heard.

That's how blogging came about. People starting putting their thoughts online, writing their own personal serial magazines, sharing themselves with whoever would listen. Some lost their jobs over what they shared, while others landed jobs. In every case, the motivation was the same: to be heard.

Now, anyone can follow that motivation, and millions upon millions do. Tweets, Facebook statuses, Tumblr posts, Instagram shares, Medium articles; these all exist to let us easily share what we think and feel and see with the world.

That's one of the biggest differences between the early web and what we have now: that it's *easy* to share ourselves. Entire business sectors have been built and vast fortunes made on making that impulse easier to satisfy.

The challenge now is in how those fragments of our lives are treated. This is as much a social question as a technological problem, but the two are not separable. What Facebook and Twitter and Instagram and every other at-scale social network does now—everything they make possible or impossible, everything they make easier or harder—will shape what we think of as normal in a decade or two. It won't utterly control the way we use the web, but it will undoubtedly influence our online behavior at a deep level.

As an example, in 2030, will we think it's acceptable to mute or block people who try to communicate with us? That seems like a ridiculous question to ask—of course it's acceptable!—and yet, if networks make it harder to do so, or even if they make it easier to *not* do so, then the answer to that question could well change. Our grandchildren may think of the act of blocking as quaint and archaic, or even outright wrong.

Or, they might well think of our current situation as unthinkably permissive and damaging. If social networks make it easier to block harmful feedback and make attacks more difficult in the first place, then the answer to the question may change to the point that nobody thinks to ask

the question anymore. The ability to mute and block and filter could become second nature.

If that seems too overblown, think about the differences between what constituted acceptable behavior when you were a child and what's acceptable now. Not in the sense that "these kids today are disrespectful little punks, unlike like when I was a kid" (the inaccurate complaint of every generation), but in a social sense. Right now, kids think nothing of getting together physically to interact digitally. Looking at a mobile device while in conversation is something adults frown upon but kids don't think of as abnormal, if they think of it at all. This didn't happen because kids are less attentive to their friends. They just grew up in a world where that was possible, and they found it desirable. As they grow up more, everything they find on social networks, both content and capability, will seem just as normal. What they think of as risky or strange or acceptable or desirable will be profoundly shaped by their experiences.

Kathy Sierra, who has been targeted for harassment more than once, relates in her book *Badass* that the horse trainer's mantra is: "Make the right thing easy and the wrong thing difficult." ⁸ Now consider the converse: what is easy comes to be accepted as the right thing, and what is difficult comes to be regarded as the wrong thing. That's why I say what we do now isn't neutral. Everything we do, from what we share to how we interact with our networks to how those networks are structured, is influencing the near

future of our societies. Not just the hyper-digital developed world's societies, but all societies everywhere, because what happens online will shape what happens offline.

And speaking of concepts that may make no sense in a couple of decades, consider the idea that there's a distinction between online and offline. We often try to demarcate them, talking about the virtual and real worlds as if the internet is a different planet that we sometimes visit and then return home. That's never been true, but the mobile revolution has made the fiction obvious. The internet is no more a separate, "virtual" world than are books or songs. We talk to each other directly, and share ourselves, whatever the medium.

We wouldn't say that by making a phone call we enter a different world; when we go online, we aren't going away either. Wherever we go, we take ourselves with us, and seek to be heard.

And so the question is, will our future be more like [#663399becca](#) or more like [#gamergate](#)? Will we see communities work together, or camps tear each other apart? Both will happen, of course, but which will become the norm? Will our societies and we ourselves become more constructive or more destructive?

Any one of us can and absolutely should make such choices for ourselves, but there's more at work here than individual choice. How we build our systems of interaction

will matter a great deal to the future. If we build them in a way that encourages positive collaboration and discourages destructive attacks, that will influence anyone who uses—and, more importantly, grows up with—those systems.

And so those who build the systems of interaction have a unique responsibility, because what they allow and forbid defines them. As Derek Powazek has said, “What you tolerate is what you are.”⁹ What networks allow, and more importantly what they encourage, defines them as well. A network where it’s easy to attack and difficult to defend makes a very different value statement than one where it’s difficult to attack and easy to defend.

Either way, the nature of a system says something very clear about the people who create that system and what *they* value; just as much as how we use those systems, and what we tolerate in the behavior of those around us, says something very clear about us and what *we* value. It’s a statement we make to everyone around us as well to everyone yet to come. This is our legacy, our message to the future about who we really are and what we truly value. We are what we build. It’s long past time we started building wisely.

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1. Eric Meyer, [“On Writing,” meyerweb.com](#) (blog), April 4, 2014. [↵](#)
 2. Eric Meyer, [“In Memoriam,” meyerweb.com](#) (blog), June 9, 2014. [↵](#)
 3. Matt Robin, [Twitter post](#), June 9, 2014, 5:14 p.m. [↵](#)
 4. Jeffrey Zeldman, [“The Color Purple,” zeldman.com](#) (blog), June 10, 2014. [↵](#)

5. [“Name #663399 “Becca Purple” in CSS4 Color?”](#), WICG (forum), June 12, 2014. [↵](#)
6. [Daniel Glazman to www-style@w3.org](#), June 21, 2014. [↵](#)
7. Eric Meyer, [“rebeccapurple,”](#) *meyerweb.com* (blog), June 19, 2014. [↵](#)
8. Kathy Sierra, *Badass: Making Users Awesome* (O’reilly Media, 2015). [↵](#)
9. Derek Powazek, [Twitter post](#), December 23, 2014, 2:19 p.m. [↵](#)

LESSON

ERIC MEYER

My paternal grandparents traveled a lot. Grammy had become a serious birdwatcher in retirement. As a result, Granddaddy had become a serious photographer, back when that was a very expensive and bulky proposition. They traveled to every continent in their seventies and eighties, taking boats up the Amazon and safaris across Africa. They usually left the country at least once a year.

As each of their grandchildren reached the appropriate age, which was twelve or thereabouts, Grammy and Granddaddy would take them along on whichever trip was coming up. It could be England, or the Pacific Northwest, or wherever.

When my turn came, they were headed to Churchill, Manitoba, by way of the northern American plains. We packed up their International Harvester light-duty truck and wandered our way through the Dakotas and across the border to Winnipeg. Part of the trip took us across Canada by way of the Canadian National Railroad; another flew us to Churchill, on the shores of the Hudson Bay.

One day, we took a small boat out onto the Churchill River, the three of us and our captain perched on plank seats. The boat was completely open, and though it was summer, it was still pretty cold. My thin gloves didn't do much to

protect me, and so the cutting wind quickly chilled my hands.

The rocking of the boat, the pain from my fingers, and the general bleakness of the day all combined to bring out the whiny, surly early teen in me. Mostly because I *was* an early teen, so those things were never far below the surface. I probably complained, and I certainly pouted, as I hunched over in a shivering ball on the plank seat near the center of the boat.

Granddaddy, meanwhile, was checking his camera gear and film rolls while Grammy kept a lookout for our quarry. I wiped my nose with the back of my hand and cursed my lot in life, that I should be suffering so in an open boat on the open bay. I may or may not have composed some angsty, overblown blank verse in my head.

Finally, after what was probably whole minutes of time, we spotted what we were there to see: a small pod of beluga whales, swimming a few dozen feet away in the water, occasionally breaking the surface to blow out sprays of exhalation.

Granddaddy lifted his camera to his eye, sighted, and took some shots. Then he looked over at me, still huddled and grumbling and glowering on my seat.

“Are you going to take some pictures, Eric? We came all the way out here just to see these little fellas.”

I whined something about how it was cold and I was cold and my hands hurt too much to hold the camera. After all, it was a Canon F-1, with a solid metal body that was just

waiting to suck what little warmth I retained out through my fingertips.

He listened to my complaints, considered for a moment, then said gently, “Well, I’ve always thought it’s worth a little temporary discomfort to get to do something remarkable.” And with that, he turned away and lifted his F-1 back to his eye.

After a minute or two—long enough to make it clear that this was all my idea, nothing to do with anything he’d said, obviously—I lifted my camera and started snapping my own pictures of the ice-white backs of the whales moving through the cloud-gray water.

My fingers didn’t hurt any less, my nose didn’t run any less—but while those aches are now thirty-plus years in the past, I still remember those whales’ backs, just a few feet away from us. I would remember even without the prints and slides Granddaddy developed from the best shots I got, out there on the waters of the Churchill River.

I don’t know if I ever told Granddaddy how deep an effect that simple sentence had on me, but I’ve heard him say it over the years, even after his death. I heard it as I finally stood atop Fubo Hill in Guilin, China, my body shaking and a fever spiking, and looked down into the Lijiang. I heard it as I adjusted my snorkel and mask in the shallow waters of a Caribbean shoreline and tried to calm my deep fear of open water.

And I heard it when I was learning to soothe each of my newborn children, my eyes sandy and my body aching from

lack of sleep, cradling and rocking and crooning to them as we got to know each other a little bit at a time—a little temporary discomfort for us both, but in exchange, the most remarkable thing I can imagine: parent and child, bonding together.



CONVERSING WITH A MÖBIUS STRIP

KELLI ANDERSON

Note: Kelli has also published an [updated version](#) of this article.

In the film *Is the Man Who is Tall Happy?*, Michel Gondry takes advantage of Noam Chomsky's open-door interview policy to see what he can learn about him. ¹ Over the course of several visits, he greets the elder linguist, gets comfortable, revs up the clickety Bolex camera, and reads a prepared question—smuggled in, we imagine, from another universe entirely.

As viewers, we can only hear them. (Gondry later sets the words to a visual track of hand-scrawled animation.) Standing in for facial expressions are the audible artifacts of attentiveness: the variations in pacing, the backing up, the stopping short.

Beloved for his you-just-have-to-see-it videos, Gondry initially seems an unlikely fanboy of the guy known as “the father of modern linguistics.” However, Gondry's experiments with film's illusionistic loopholes and Chomsky's discoveries of how language acquisition works share something remarkable in common. Both men

abandoned the prescribed methodologies of their fields and instead tested hunches into unknown territory.

Next question.

After a deferential pause, the filmmaker falls out of step with his subject by posing a question that's uncharacteristically far afield. It's about bees. But just as quickly as a buzzing motif is rotoscoped in, Chomsky shuts the thing down. The serene colors abruptly turn to confusion, capsizing the frame into waves of colored lines.

Gondry's question relates to how bees build ambitious, complex worlds for themselves by crafting the single shape of a hexagon over and over again. Since the hexagons probably weren't mandated by some sort of bee-zoning committee, we must assume that bees simply "think in hexagon." Of course, Gondry's bees in this metaphor are really us, and he is really asking Chomsky, "Is language our hexagon?" Does language define the limits of everything we dream up?

The limits of my language are the limits of my world.

— Ludwig Wittgenstein [2](#)

Gondry would have been better off asking cognitive scientist and linguist Lera Boroditsky the bee question. For the past ten years, she has been researching how language shapes thought, documenting the relationship between our word-reality and our sense-reality. Her experiments

demonstrate that our brain's aptitudes really do differ according to how different languages frame the world for us.

For example, the language of the Kuuk Thaayorre, an Aboriginal Australian group, designates space in terms of the cardinal directions (your north leg, a south turn, etc.), rather than our relative left and right. ³ When dumped in a maze-like building for a few hours, the Kuuk Thaayorre performed far better than their western counterparts in signaling researchers back to the entrance. It turns out they are superior spatial thinkers and better navigators.

Boroditsky explains why this is the case: "An obvious consequence of speaking such a language is that you have to stay oriented at all times, or else you cannot speak properly."

A similar observation led Boroditsky to test whether differences in color terms leads to differences in how we see color, comparing English and Russian speakers. In Russian, there's a word for light blue and one for dark blue, but not blue. They're simply two different colors, like orange and yellow.

Boroditsky tested the two groups in a lab to see if light and dark blue actually look more distinct to Russian speakers' eyes. Judging by differences in the time it took them to identify the colors, they do. The Russian speakers could distinguish between the two colors instantly, and the English speakers lagged behind, sometimes by seconds.

Boroditsky's research suggests that language shapes our sensory experience of the world because it directs us to pay

attention differently—language focuses our gaze on concepts for which there are words. An obvious conclusion, perhaps, but this has broad implications for the deprioritized zones. Even in an age when we can collect deep, nuanced data on almost anything, there are big holes in our scaffolding. For example, when we get sublimely dizzy staring up into a cathedral ceiling, shift to and fro to see the end of a long corridor wag, or glance back at an empty apartment, we feel—through our senses—the profound weight of spatial events. But try to tell a friend about it and it evaporates like a dream.

In the final essay written before his death, sculptor Donald Judd noted that his life's work with space yielded "particular and plentifully-diverse knowledge" to him, but that "to almost everyone it doesn't exist." ⁴ Why do we have terms for linguistic minutiae like "synecdoche" and "metonymy," while we lack granularity for visual, spatial, audible, and tactile phenomena?

Try to find the words to describe a normal, everyday something—like how cilantro smells—and you'll quickly find the edges of language. All interfaces create the illusion of comprehensiveness, as if to say, "*This*, and only this, is what you can do." It's to be expected then that language, as an interface, pulls the imagination into its own orbit.

To see is to forget the name of the thing one sees.

— Paul Valéry ⁵

So how do we ask a question beyond the bounds of an interface? Is there a way to converse with the material world in its own vocabulary? Many art and design thinkers have attempted to give proper, permanent expression to those unlabeled experiences we encounter.

The artist Robert Irwin may be the unofficial mascot of coherent discussions with the unnameable. In 1977, and then again in 2013, he installed a piece so large that it consumed the entire cement fourth floor of the Whitney.⁶ However, when the show opened, people often walked right by it. Irwin recalls, “People would step out of the elevator, say, ‘Hmm, empty room,’ and hop back in before the doors shut.” But the floor was not quite empty—and in Irwin’s work, “not quite” can mean “the entire world.”

When I visited the reunion tour in 2013, there was nothing I could name—no sculptures, vitrines, frames, hardware. The space appeared to contain only a single stretch of sheer material dividing the room into a grid of four chunks. It was all dramatically oriented to a single window.

Traditionally, one would call this an empty room, but to the senses, it was full—loaded with shifting shapes, corners, shadows, surfaces, dramatic lines, textural changes, rays of light, blurriness, and sharp edges. Lines pivoted and cascaded around me in an orchestrated slow shift as I walked from corner to corner. This new sensitivity stuck with me beyond the museum walls, as I noticed the skyscrapers bending in a canopy above my head. All of those instances of nothing had been filled with an exhilarating *something*.

“The purpose of art has always been to wake people from such non-thinking,” Irwin writes. ⁷

Much like adding a word to one’s vocabulary, experience itself is indeed transmittable and readily becomes part of the beholder’s world. Indeed artists, scientists, and craftspeople pass their ideas forward through demonstration.

Everything is an event on the skin.”

— Ludwig Helmholtz ⁸

To start his conversation with Chomsky, Gondry simply had to pick up the phone and make an appointment. To start a conversation with a material, we only have to pick it up and “play.” Prolific designers like Charles Eames have already encouraged us to have faith: there is much to learn from the firsthand.

However, there is an undervalued but essential second step in the conversation: observing the reply. Irwin says that his job as an artist is more about listening than doing. The passivity of his approach belies its radical implications. Letting a *thing* begin the conversation is often appropriate, but it threatens the structured assumptions of the professional world.

“Curators would call and ask me, ‘If we invite you [to create an installation], what are you going to do?’ and I would have to say, ‘Well, I don’t know what I’m going to do; I’ll just spend some time there and then decide.’”

Rather than forcing his will upon his subject, Irwin thinks we make the best use of our most sophisticated hardware when we keep our antennae up. We can gradually attune our senses to subtlety in much the same way that we'd slowly train our brains to speak French. In *Designing Design*, the man behind MUJI, Kenya Hara, echoes this sentiment when he expresses that the joy of paper is not about what we do *to* it, but what it does for our minds.

"It's not the delicacy of the paper in and of itself ... but the finely-tuned human senses paper can awaken ... the distant universe and our immediate world can both be found here." [9](#)

Hara notes that touch—as well as sight, smell, taste, and hearing—are all responses to pressure on the skin. Skin is our single natural interface on the friction of the world—whether that friction is a pin prick or a photon of light bounced from a magazine page onto our retinas. It's the turnstile through which all information must pass—our first front in understanding anything, not just the touchy-feely stuff. It's keeping our brains in check with material fact. In this way, we navigate the friction of the universe intellectually, through our skin.

Perhaps even abstractions and logic—while resolutely immaterial—can be accessed by hand. Mathematician Masao Morita asserts that sensory thinking plays a more vital role than expected in his field. For example, researchers believe that the geometrically perfect circle was first discovered by hand. [10](#)

Morita explains that Stone Age technology succeeded where thousands of years of artists later failed, through a gesture that *just happens* when you work with stone tools. By rotating a small, hard stone into a larger slab of softer clay, a fixed centerpoint is established. Further rotation scrapes away the softer clay at a fixed distance from the centerpoint. The one and only shape that can result from such an action is a circle, a perfect one.

Similarly, some logic concepts are best transmitted through touch. Most third graders have taken a strip of paper, twisted it once, and taped the end together to make a one-sided object.

In spite of its simple recipe, the Wikipedia article describing the “non-orientable” surface of a Möbius strip is unreadable at best. With an elegant little curl, the Möbius strip tears apart everything we’ve been told about flatness and dimension in our world. To backtrack on those labels—to explain exactly *how* this shape defies seemingly fundamental boundaries—requires a tangled web of language.

In a Möbius strip is a profound mismatch between what we can see with our eyeballs and what we believe is true. It forces us to reconcile with our minds, by scrambling with our hands, something that subverts our inherited understanding of reality. In these instances, the vast feedback-generating machine of the universe is literally yelling back at us: requiring that we intellectually understand with our hands to make new, novel sense of an experience with our brains.

This uniquely human method of physical reasoning is being used to tackle complex modern engineering problems inaccessible by other means. The authors of *Geometric Folding Algorithms* explain, “Because the topics are tangible, physical intuition makes them accessible via a wide variety of preparations.” [11](#)

On the screen, when Gondry wants to know something, we hear a pause, and he can simply ask his interview subject a question. We anticipate that Chomsky might answer in return (unless: bees). In their careers, however, both men had to interrogate the unknowns of their respective fields with a creative and nimble form of give-and-take.

This process is much like bouncing a ball off of an object in the dark to assess its shape. The feedback we receive when engaging an idea this way is always better than the models we construct in our brains. This is how friction helps us think, learn, adapt, and eventually understand. It keeps us tethered to material facts in a way that other investigation methods do not.

With questions asked through actions and answers received from the senses, we use friction daily. We experience it when we push to assess the stability of a chair, wait for an echo to locate distance, or walk across an empty room to assess its size. And when we press our fingers into spinning clay to feel it bend, we’re using sensory wisdom to converse with the pre-existing mechanics of the universe.

By simply feeling it out, we can conduct a conversation with a line, a sound, a color, a taste, a chunk of code, or a material: “Does this work? ... No ... OK, well, what about this? Huh. Interesting ... Oh! What about this?” The surprises that occur along the way often present as nuisances—roadblocks to best-laid plans—but are also exactly how we get to new information.

When something that we didn’t ask for happens, it’s a gift. We get answers in places we didn’t even realize we should question. By observing responses to physical questions, we can get out of our own minds and enter into an empathic understanding of how things really work.

By the time the film ends, Gondry has successfully navigated a conversation with a man who is notoriously difficult to know. He does this by listening and deftly recalibrating according to his subject’s signals. He has broken past Chomsky’s talking points and has revealed some underlying truths.

The shape of the conversation was far too idiosyncratic to have been hatched using the raw ingredients of knowns, assumptions, and expectations. It had to play out unscripted, as a genuine experiment with all of the glorious uncertainty, messiness, improvisation, and misunderstandings that entails.

While talking to people will always be unpredictable, in the future there will be fewer opportunities to be surprised by our conversations with things. The rise of haptic (touch) tech will mean that more of our stuff will behave exactly as

expected—invariably lightening the load on our give-and-take physical intuition.

Designers like me are building a new sensory world of interactions with a single goal in mind: to accommodate exactly and *only* what the user wants to do. We will work to eliminate all physical and psychic friction. We will shape interfaces that are an exacting mirror on the user's intentions—a mirror that signifies nothing about the structure underlying the exchange. No balls need to be bounced in the dark here.

The real reason bees “think in hexagon” is that the hexagon is—undoubtedly—the best and *only* shape for the job. [12](#) Pack a bunch of circles together and there will be gaps at the corners. Pack a bunch of triangles together, and you'll find yourself needing twice as much wax than if you had employed a more capacious shape.

The hexagon is the logical and elegant conclusion to a specific problem—an example of perfection in design refined by millions of years of natural evolution. It is also an endpoint, precluding any further investigations into the unknown. Human beings, however, need the unknown. Without it, we are just talking to ourselves.

Unlike the interface of physical reality, there is only the illusion of exchange in these digital haptic experiences. We will no longer listen for an echo in response. We will no longer push to feel the structure and principles beneath. It will be harder to justify persistently asking *how* and *why* when there is nothing beneath the interfaces except our

own intentions reflected back at us. Our future will be response-free: populated with things that don't push back.

1. *Is the Man Who Is Tall Happy?*, directed by Michel Gondry (2013). [↵](#)
2. George Pitcher, *The Philosophy of Wittgenstein* (Prentice Hall, 1964). [↵](#)
3. Lera Boroditsky, "How Does Our Language Shape the Way We Think?" *Edge.org*, June 11, 2009. [↵](#)
4. Donald Judd, *Some Aspects of Color in General and Red and Black in Particular* (Sikkens Foundation, 1993). [↵](#)
5. Lawrence Weschler, *Seeing Is Forgetting the Name of the Thing One Sees (Expanded Edition): Over Thirty Years of Conversations with Robert Irwin* (UC Press, 2009). [↵](#)
6. Roberta Smith, "Ineffable Emptiness, From Dawn to Dusk: Robert Irwin's Light-and-Space Work Returns to the Whitney," *New York Times*, July 25, 2013. [↵](#)
7. Weschler, 2009. [↵](#)
8. Kenya Hara, *Designing Design* (Lars Mueller, 2011). [↵](#)
9. Hara, 2011. [↵](#)
10. Kenya Hara, *Subtle - The 47th Takeo Paper Show* (Takeo Co., 2015). [↵](#)
11. Erik D. Demaine and Joseph O'Rourke, *Geometric Folding Algorithms: Linkages, Origami, Polyhedra* (Cambridge University Press, 2007). [↵](#)
12. Robert Krulwich, "What Is It About Bees and Hexagons?" *Radiolab* (blog), May 14, 2013. [↵](#)

LESSON

KELLI ANDERSON

Our eyes followed the *whoosh* as it traveled from one end of the room to the other, provoking *whoas* of admiration. That sound bounced off the floral wallpaper, around ceramic pineapple soap dispensers, and reverberated into the four corners of a space where it was not supposed to be.

We had covered the bathroom mirror in an invisible graffiti of hairspray. Now with contraband cigarette lighter in hand, my buddy Adam and I took turns setting sticky lines ablaze. Flaming cat face after flickering obscenity, each drawing was a purple-orange burst for only a moment. The mirror emerged unscathed each time, as if some kind of exculpatory miracle had just occurred. But on the other side of the looking glass, our minds had forever changed. We were now officially skeevy teenagers, here to break the rules.

By violating the code of domestic conduct, we transformed a suburban bathroom scene into a lightshow of flaming danger. Herein lies the design flaw of all rules: they reward the breaker, not the follower, with an addictive sense of expanded possibilities. Surrounding any prohibition is a beckoning vacuum—a space within which almost anything can feel novel and thrilling. And so we found ourselves basking in our radical change of scenery without ever

leaving the room. Which was a good thing because I was grounded. For like ever.

It won't come as a surprise that I was stuck in my room for most of adolescence. The same blue, lumpy paint coated the walls before and after I had watched Kubrick, read Marx, heard Nirvana. I lacked the power to actually modify my physical surroundings. But I could flip the table with panache, if only for a surreal moment. From there, the sweet taste of one broken boundary tended to spread.

I'd like to think I'm less skeevy as an adult now, but I still struggle with rules. Breaking them is an impulse when engaging with anything, even if I find myself gluing the shards back together in the end.

When I landed in the Tokyo airport last year, I was confronted with a confoundingly different approach to rules. At odds with the silent march of roller-bag walkers, I darted across the low-pile carpet to peer into shop windows. There I found that every little object had been reinvented: 50 different ways to construct a notebook, 20 different variations on the nail clipper.

And yet, everyone walks single file. Everyone stops for "don't walk" signs. I paused, *How could this be? How could such prolific experimentation be nurtured in a place where rule following is a national pastime?*

As part of a cultural exchange for designers, I continued my travel out to Takaoka, and then Kanazawa. I visited several design, art, and robotics studios around the country. Wherever I went, I saw wildly unorthodox versions of

everyday things and therefore persisted with my inappropriate line of questioning.

I met a designer who had discovered that an additional bend could transform the metal paperclip into a much superior clip-and-carabiner combo. When asked why no one had realized this before, he simply guessed that no one ever looks closely at something as simple as a line.

“We take lines for granted,” he said. A line is too fundamental a thing to attract the focus of intentional innovation: innovation has to come from the line itself.

Similarly, I met a metalworker who had deviated from a traditional casting technique to establish his own metalwork genre. He described the departure this way: “I accidentally dropped one of the rods. I thought it looked incredible floating in the molten metal, and so, I kept it.”

The common sentiment was that it was the subject’s role to free itself from the complacency of the human imagination. It wasn’t, as I had assumed, the designer’s impulse to challenge established morphologies. Materials have a slow way of revealing their more radical properties on their own terms, as you spend time with them.

Common wisdom tells us that having more choices is always better. The strategy is to keep as many options open for as long as possible. But what if the opposite were true? In the scientific method, for example, one can only gain understanding by narrowing possibilities. Scientific experimentation requires that commitments be made, that

everything be strictly controlled except for the lone variable under investigation.

I know now that in truly experimental spaces, something more akin to scientific observation transpires. When everything else is fixed, ordered, and controlled, rules can function like a microscope, attuning our senses to things we couldn't perceive otherwise. This focus subdivides our gaze into prisms of greater and greater subtleties. The boundary between black and white is then split into a hundred interstitial tones, so that the rules we thought were there are revealed to be the illusion they truly are.



OUR NARRATIVES, OURSELVES

JESSICA COLLIER

Crossing a bare common, in snow puddles, at twilight, under a clouded sky, without having in my thoughts any occurrence of special good fortune, I have enjoyed a perfect exhilaration. I am glad to the brink of fear.

— Ralph Waldo Emerson ¹

When I was new to the technology industry—not wide-eyed exactly, but still doing a lot of double-takes at strange terms and blithe turns of phrase, followed by a lot of surreptitious Googling—I was struck by how very idealistic the whole enterprise seemed. Cycling down Valencia Street in San Francisco, past the coffee shop where I had crammed fifteen hours a day for my doctoral qualifying exams, the sense of possibility was palpable. I felt, like Emerson crossing Boston Common, the extraordinary at work in the everyday.

Indeed, Silicon Valley takes a lot of lessons from transcendental idealism. Its ethos combines a sense of connectedness to a larger force with the freedom to define yourself; the promise of this strange, exhilarating, half-mythical cocktail is that you determine your own fate. It's a boomtown mindset, undoubtedly—there a lot of people stumbling around drunk—but also a concrete manifestation

of something that the Transcendentalists understood on a more philosophical level: you can change the world by imagining it differently.

This piece is about reimagining narrative. The pervasive sense of possibility means that, as an industry, we exist in a perpetual state of self-definition. Neither our products nor the organizations that produce them are static for long. In such an environment words matter, of course, but why? How do we deal with language in the course of designing things that we think might, just might, change the world, even as those products themselves are always changing? Finally, in doing this thinking around narrative, what can we learn about our industry and ourselves?

Works in Progress

We're constantly seeking to make technology products more human. The current emphasis on storytelling stems, we claim, from the belief that fewer things are more inherently human than the power of narrative. And this isn't just tech talking: it's a grand American tradition to reap the rewards of telling a good story. Benjamin Franklin, that abundant source of aphorisms and productivity tips, is infamous for a story in his *Autobiography* about, of all things, fishing.

On a sea voyage from Boston in the 1720s, Franklin's ship is becalmed off Rhode Island, and his fellow passengers begin catching cod. On a "vegetable diet," he views "the taking every fish as a kind of unprovoked murder, since

none of them had or ever could do us any injury that might justify the slaughter.”

This view seems “reasonable,” but Franklin, previously “a great lover of fish,” is also hungry. As the cod in the frying pan begin to smell appetizing, he battles with desire until recollecting that, when the fish were sliced open, smaller fish were taken out of their stomachs. “If you eat one another, I don’t see why we mayn’t eat you,” thinks Franklin and dines happily.

“So convenient a thing it is to be a *reasonable creature*,” he reflects of this story in the *Autobiography*, which he began writing in 1771, “since it enables one to find or make a reason for everything one has a mind to do.”² What the reader might be tempted to call a lack of conviction Franklin pins instead on a renewal of principle: hungry for fresh fish, he simply revisits his original reasoning and finds it in need of iteration. Presented with the most deliberate artifice, this evolution is nonetheless organic, imbuing the colonial recollection with a sentiment that should feel familiar to us today. The narrative structure does as much work as the events of the story, defining Franklin not as a vegetarian or pescatarian but as someone who is always redefining himself.

It’s the tale, in other words, but also the telling.

People in Progress

Industry catchphrases reflect a penchant to iterate fearlessly on products—rapid prototyping, “fuck it, ship it,” lean

principles, “fail fast”—but rarely do we delve into the constant evolution around how we define ourselves as we build them.

One of the things that I learned early on, without any Googling at all, is that professional identities change before our very eyes. There wasn’t, for example, a community manager or head of people ops at most organizations five years back. It’s hard to know how marketing and support hybridized into “community,” or when precisely human resources began morphing into “people operations,” but our colleagues who work in these fledgling fields would likely agree that they represent an evolution in thinking rather than a simple etymological switch.

The field of design in particular has undergone a long and dramatic change. In 1986, Brenda K. Laurel wrote that designers “remain a ‘luxury item’ in the consumer end of the industry.” ³ Ten years later, design was still a nascent discipline. Over the last two decades, however, it has professionalized fiercely. Though it’s still common to hear reductionist arguments about design as a way to “make things pretty,” a good designer is now considered a necessity for any organization intent on building something usable and useful.

The new luxury item of the design and development process is the writer. Even in the midst of a content renaissance, designers, product managers, and engineers often fill the writerly void, inserting language in their

particular style and paining persnickety custodians of voice and tone everywhere.

As a writer, my job titles have spanned various permutations of “user experience writer” and “content strategist”—including, for the minimalist win, “writer.” “Design” is occasionally thrown in. “Wordsmith” and “storyteller” have been tossed around. I’ve been referred to as a “word engineer,” “word designer,” and “word expert.” All of this is fair: I deal primarily with words, which are a type of content. I work on UX and product and exploration teams. I craft (design? engineer? smith?) narratives.

My résumé, then, is a slow-motion capture of the chaotic evolution of our thinking around narrative. If you look closely enough, this etymological chaos reveals a lot about our industry-wide relationship—ambivalently attentive, intermittently enthusiastic—to words.

All the Content

For writers who care deeply about language in web and product design, content strategy is a gateway drug. Content strategy is not, however, exclusively or even primarily focused on writing. To deploy Kristina Halvorson’s widely quoted definition, “Content strategy plans for the creation, publication, and governance of useful, usable content.” ⁴ The term surfaced in the late 1990s as a strategic approach to dealing with what the typical user faced on the web: a morass of words and images and data and sounds and video and comments in desperate need of architecting.

Formulating itself as an umbrella discipline, content strategy claims jurisdiction over, well, everything that the user encounters on the web plus the organizing principles behind it:

Everything is content ... What about design? Yes, it's content. Structure? Content. Metadata? Also content.

— Rachel Lovinger ⁵

The web is content. Content is the web.

— Kristina Halvorson ⁶

In the web industry, anything that conveys meaningful information to humans is called 'content.'

— Erin Kissane ⁷

These definitions are provocative by nature, open for interpretation like a Rorschach inkblot test. As a result, they sometimes lead to disclaimers. “Is content strategy the same as content marketing?” asks Jonathon Colman. “No, never.” ⁸ Content strategy “doesn’t belong to any of us any more than graphic design belongs to advertising or project management to aerospace engineering,” contends Kissane. ⁹

These sources, along with many others that have shaped content strategy as a discipline, point to two related challenges. First, like the value of design in 1986 or even at

the turn of the millennium, the value of writing and careful language is still not assumed. We are well on our way, but content strategy, the intuitive entry point for changing hearts and minds, is a “big, big world” that—and this is problem number two—currently covers perhaps too many sins for its own good. [10](#) It’s time for a conversation about what sits under the “everything” umbrella.

Get Thee to an Ivory Tower

This discussion might seem rather academic, but that is, frankly, kind of the point: it’s a way of pulling back the curtain on how we specialize and adapt in an industry that moves quickly. Indeed, as we map the content terrain to make it more legible for both practitioners and observers, we might take a page from academia.

Consider the field of English, which I use as an analogy because many writers and content people have a background in literature, myself included. Like content strategy, English is a big, broad discipline rather than a niche one; it contains multitudes. To accommodate the specialization necessary for careful thinking, it has splintered into subfields. Practitioners identify their work by period as well as by ethnicity or nation or “other”—gender and women’s studies, animal studies, African-American studies, disability studies.

Specialization does not, however, mean silos. Disciplinary boundaries are permeable and overlapping. A nineteenth-century American literature course, for example, might

cover Transcendentalism, slave narratives, sermons, philosophical essays, poetry, and popular novels by female writers, with texts that include prints, paintings, caricatures, and material objects in addition to books. This approach makes the implicit argument that you can't understand a sliver of cultural history like nineteenth-century American literature without context. You can't produce good work in a silo.

Forging a field that claims substantive ties to a broader discipline does not require living in an echo chamber. For writers, now is a moment to define not just how we manage “content,” but how we approach the language that constructs the user experience. What does it mean to think more deliberately about narrative, writing, *words*—not to divorce them from content writ large, but to formulate practices for the corner of content strategy that accounts for linguistic style and nuance? What does it mean to practice narrative design?

The Narrative User Experience

We're familiar by now with the assertion that every product tells a story. We work so hard to tell good ones, but words matter even more when, in product design as in poetry, we're using fewer of them. Deconstructing stories and designing them for particular contexts is a specialized craft—a craft that requires engaging with language on its broadest and most persnickety levels simultaneously to create precise, systematic nomenclature.

Words are extraordinarily powerful product tools, but we're not yet accustomed to dealing with them in the design process. Organizational dynamics and workflows often conspire to contain the messy work of narrative with a modular approach:

"What's a better word for [insert random word]?"

"I'll just lorem ipsum this for now."

"Can we get a line of copy?"

"I need words here."

The peaceable response would be to say, "Just a sec," "Fine," "Yes," "OK," and generate some words for whatever piece of interface or mockup or wireframe your well-meaning colleagues are pointing at. But if you're concerned about overall user experience, it is, instead, a thousand times, "No." Narrative is a collaborative effort. Each time we move a user through a flow, designers and writers together have the responsibility to help them relate to it and make meaning along the way. It should, then, come as no surprise that work approached in a piecemeal way doesn't end up being as good as it could be.

Despite the odd panoply of titles, the core of my job has always been to fashion, in concert with interaction design, a consistent narrative experience that guides users through a product or interface or feature. Acting as a drive-by human

thesaurus or a drop-words-here copywriter made me bad at that job, but the product suffered, too. I wanted to change the nature of the conversations happening throughout the design process, not by claiming everything as my purview but by honing in on what really matters when writing for the user experience: a holistic approach to language.

As we build products, we would do well to think more deliberately about the narrative we want users to take away. What is the thesis of this feature? How does it allow the larger product to fulfill its destiny? What are the microelements with which the user interacts that allow the narrative to take shape gradually and organically? What impact do those elements have on the larger interface? Narrative UX addresses the linguistic facet of these questions so that users can immerse themselves in an experience—so that the seams, which often chafe when product language is halting or robotic or poorly considered, melt away.

Always Be Rewriting

Let's return to that term, storytelling, which often manifests when we talk about user-facing language. We tend to account for its intense hold on our collective imagination by noting that, in an age when people are wired tautly together, stories are a natural unit of human intercourse. But naturalizing something, claiming that it's innate rather than learned, is an easy way to discount the work and skill required to create it. Popular conceptions of the art of

storytelling—the fact that stories are, simultaneously, what we read to children before bedtime and what we believe to be a key conversion and retention tactic—belie the complex structure and linguistic precision that go into the practice of writing for users.

Good stories aren't the breezy outcome of inspiration any more than they're the final, neglected task on a product manager's checklist. Rather, good stories are the sum of many technical decisions. We prize an accessible, conversational narrative experience for users, but an easygoing tone isn't easy to achieve. We want the magical experience of the final product to supersede the labor that went into creating it, to be greater than the sum of its parts. That means doing to our products what professional writers do: endless drafting, fearless cutting, perpetual revising.

It's the tale but also the telling. What Ben Franklin teaches us, in an industry that's constantly redefining itself, is that demonstrating to the world who you are and what you stand for is an iterative and ongoing process. Though famously influential, the *Autobiography* was never finished—Franklin worked on it from 1771 until his death in 1790, expanding and recollecting and correcting and revising. Technical decisions over the course of almost twenty years crafted what we experience as the final product, a narrative construct that becomes conflated in most reader's minds with the man himself.

Then as now, narrative is a moving target. We reimagine it because, in order to evolve, we must. The promise of Silicon

Valley's transcendental ethos—the freedom to define yourself by tapping into a larger force, thereby determining your fate—is really just a commitment that we make to transcend our current state. We design the narratives that we think might, just might, change the world by always rewriting both our software and ourselves. We shape our own history by writing over it a more refined narrative than the one we wrote yesterday. Channeling Emerson, we write our imagination into reality, and idealistically into a better future.

1. Ralph Waldo Emerson, *Nature* (James Munroe and Company, 1836). [↵](#)
2. Benjamin Franklin, *The Autobiography of Benjamin Franklin* (Houghton Mifflin and Company, 1888). [↵](#)
3. Brenda K. Laurel, "Interface as Mimesis," *User Centered System Design: New Perspectives on Human-Computer Interaction* (Lawrence Erlbaum Associates, 1986). [↵](#)
4. Kristina Halvorson, "[The Discipline of Content Strategy,](#)" *A List Apart*, December 16, 2008. [↵](#)
5. Rachel Lovinger, "[Content Strategy: The Philosophy of Data,](#)" *Boxes and Arrows*, March 27, 2007. [↵](#)
6. Halvorson, 2008. [↵](#)
7. Erin Kissane, *The Elements of Content Strategy* (A Book Apart, 2011). [↵](#)
8. Jonathon Colman, "[The Epic List of Content Strategy Resources,](#)" *Jonathon Colman* (blog), February 4, 2013. [↵](#)
9. Erin Kissane, "[Content Strategy Is Not User Experience,](#)" *Brain Traffic* (blog), February 10, 2011. [↵](#)
10. Ibid. [↵](#)

LESSON

JESSICA COLLIER

I often tell the story of my academic transition by starting *in media res*: “The day after I filed my dissertation, I went to work full-time as a consultant for a small software company.”

Really, the things that I did the day after I filed my dissertation—a Saturday—were: 1. cry, partly out of naked relief and partly out of sheer terror, and 2. go on a long hike up at Point Reyes to banish the existential but also weirdly postpartum dread of starting anew, all over again.

I went to work as a full-time consultant on Monday. The elision of the weekend might seem insignificant, but it does a lot of rhetorical heavy-lifting. It indicates immediate turnaround, pulled off without hitch or hesitation. Picking up in the middle of the action, it omits the decision-making process that led to a non-academic career. Specifically, I don’t say: “I realized that, while I enjoyed teaching, I didn’t want to devote as much time to it as most academic appointments required. I also realized that writing for the narrow audience that academia provides felt increasingly claustrophobic and unfulfilling.”

I’ve told this story in a conference room, one-on-one with a CEO. I’ve told it in front of a panel of eleven people at a job interview. I’ve told it at parties and family get-togethers over

glasses of wine. Each time, I've presented what was in fact a genuinely traumatic transition as a foregone conclusion.

I learned from the best how to polish away rough edges. My PhD advisor—a position for life, which is why I speak of it in the present tense though I am as fully doctored as it is possible to be—is a very deliberate, detail-oriented, and patient person. Her ability to read, closely and beautifully and ruthlessly, everything from novels to paintings to advertisements to dissertation chapters is inextricable from her penchant for transmitting heady life lessons masked as professional truisms.

“Jessica”—she prefaces advice with solemn first-naming—“Jessica,” she said one rainy afternoon well into my doctoral candidacy, looking up from a stack of printed draft pages strewn with comments in her green ink, “these projects are with us for years.”

We were in a cafe, sharing a plate of biscotti. My iced coffee was sweating on the wood table. Despite the caffeine, I was exhausted, chafing under what felt like an endless apprenticeship-cum-prolonged-adolescence that was becoming harder and harder to explain to my loved ones who existed outside of academia (namely, all of them). I wanted to send out the marked-up pages as an article—publish or perish—and she was keen for me to hone the work further, holding it tightly to my chest until the day that it was so perfect, so magnificent, so seamless a thing that it would appear without warning in a journal as though sprung from Zeus's forehead. Her compact advice—*These projects*

are with us for years—was exemplary of the only kind of writing she deemed suitable for the eyes of the world: polished and refined, distilled and precise, packing endless meaning into well-chosen words.

Under her mentorship, I acquired a verbal tic intended primarily for initiating discussion of the kinds of texts that she believed in producing: “What can we say about this?” Standing in front of a class, she—and eventually I—would read a passage from Anne Bradstreet or Margaret Fuller or Emily Dickinson or Henry Thoreau, then look up and ask, with a small smile that betrayed just how many things there were to say, “What can we say?”

It is, to be honest, the most foolproof way I’ve encountered to dive into lines of text. I mean, what *can* we say about that advice, those seven words articulating a worldview that seems to revolve around endless incubation? Graduate school can feel like a continuous present, with no clear sense of the future. You mull, and you mull, and you mull, iterating on the same ideas until they’re worth something in the academic marketplace. But how do you square that with the capitalist model of knowledge production at the core of contemporary academic life, let alone the model of material production at the core of private industry?

Technological products, after all, will not be with us for years. You have to get them out the door. Tech is all future—what you ship today, you’ll iterate tomorrow. The entire industry evolves so quickly that it’s hard to make the present count.

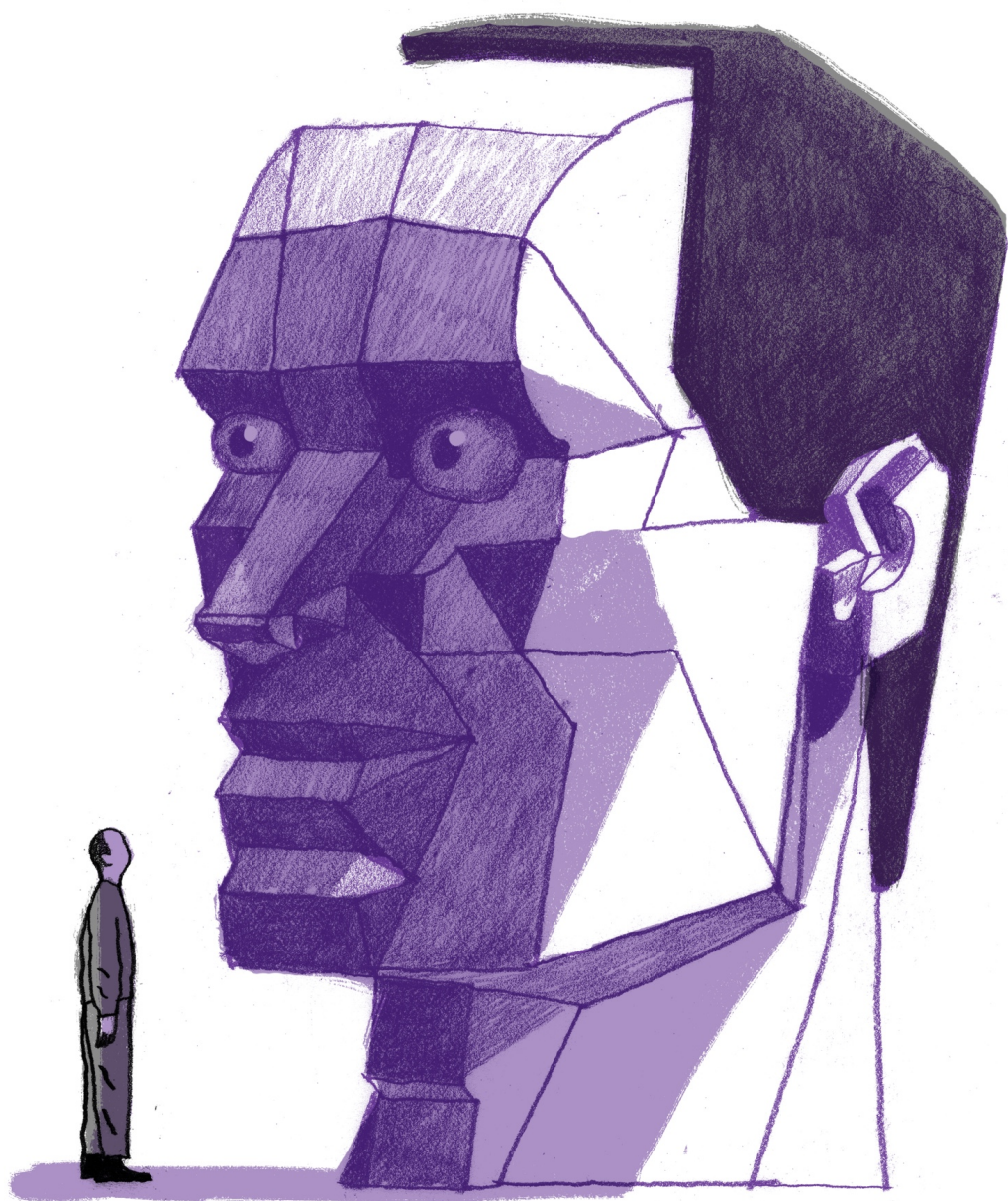
When I read it closely, *These projects are with us for years* is a summation of a particular model of professionalism. In this model, all of the struggle, the labor, the gut-tearing process of thinking and writing and creating ideas must be rendered invisible, folded into something larger that is always in process. The final product is never completely final, but it's an ever-expanding representation of what your mind is capable of. And you—smooth and polished, seamless and self-possessed, never scrappy or harried—grow to embody your work.

I am a deliberate and detail-oriented but rather impatient person. I want to create thoughtful work. I want to put it out into the world so that it can develop with the aid of oxygen, breathe in the zeitgeist and shape itself accordingly. And I don't see these desires as mutually exclusive.

In the end, I left my academic career behind. I did not, however, leave everything it bequeathed me. I've retained that verbal tic. I've internalized the need to theorize about what I do—to think not just about getting work done but about articulating how to do it and imagining the larger ramifications of that process. And I've realized that the most important piece of that rainy day advice is not simply the idea that good work is cumulative, but the concomitant notion that as you gradually iterate on your work, you become a different version of yourself.

The thought processes honed by creating things—those are what last, what carry over into the next things you build and how you live. Maybe it doesn't take seven years to

create one substantial thing, but it takes far more than seven years to become a person capable of creating something worthy of being called a life's work. These projects are with us for years.



CONTAINING MULTITUDES

MILLS BAKER

Consider the uncle.

A friendly enough figure from your childhood, he's now part of the constellation of family members with whom you share much and little at once. He tells amusing stories about your parents. He's an avid fan of the same sports team that you are. You love his children, your cousins. But he also has unpleasant political opinions that you strongly dislike hearing.

He approaches you at a holiday gathering and begins to reminisce about your mother's infamously rowdy youth. It's riveting and hilarious. You're wide-eyed, nodding along, looking directly at him with attention and a slight, involuntary smile on your face. But after a few stories, he digresses into his take on some political controversy, and here is another side of the man: his position seems not merely incorrect but deeply objectionable. Your replies are short, the bare minimum; you don't maintain eye contact; perhaps you excuse yourself, mentioning that you need to refill your drink. (And perhaps you do.) Whereas the first subject yielded great conversation, the second halts it.

At the next gathering—assuming that he's normatively socialized—your uncle might be likelier to bend your ear about your mom and cousins than about his opinions on

politics. Your subtle, soft signals conveyed to him that you prefer some subjects to others, and both of you get more of what we all seek in social interactions if he respects those preferences. He gets your affection, attention, and appreciation; you're entertained by stories of mom's salad days. Best of all, no painful confrontations or laborious, preemptive declarations of acceptable subjects were needed. Fluidly, you came to an understanding that will be iterated on over the course of your lives. He will occasionally test your interest in proximate areas—as you will his—and together you'll negotiate a conversational arrangement that works fairly well for both of you.

If we can only dream of such a successful resolution with family members, we at least know this process with friends and acquaintances. This “mutual personalization” of relationships is a constant, ubiquitous, and vital part of how we order our lives. We send and receive signals about one another's attention, interest, and mood unceasingly, often involuntarily. Likewise, we tailor our own attention, expression, and behavior to achieve appropriate concord with interlocutors, and in doing so as individuals we aggregate into groups aligned around shared norms.

Our signals and responses range from the subtle and unconscious to the overt and deliberate, and they've evolved with us over the course of millennia. They are sometimes described as part of etiquette; they help us maintain harmonious relationships in different areas of our lives (and at different times). For groups, they constitute

community standards and can even become the status quo. A rich set of subtle and multivalent signals allows individuals to preserve themselves even as they meet the demands of others and of groups, for good and ill.

Online, it's a different story.

Instead of using the rich signaling vocabulary humanity has developed, our digital social relations are governed by very simple data models and UI schemes. There are often just a handful of actions users can take in social software, and most are overt and public. Except in the most advanced systems, the options regularly sum to a single choice: "I want to see everything from my uncle" or "I never want to see anything from my uncle."

If only your uncle were that simple; if only anyone were.

Containing Contending Multitudes

Humans "contain multitudes," ¹ but it's hard to feel at ease with our multiplicity when any utterance might be met with confrontation or sudden, summary rejection. While we can fault the judgmental, the truth is that we designers have created this situation; for example, by giving hundreds of millions of users a single room in which to discuss football games *and* funerals, protest marches *and* gossip, or by making stressfully explicit who "follows" whom. In such spaces, it's amazing that *any* expressions occur without blowback.

This is bad enough for each of us, but worse is that individual anxieties about judgment, expression, and norms

aggregate into group tensions. The impossibility of subtly negotiating multiple communities' expectations and boundaries results in much of the notoriously intense harassment, moralizing, othering, and shaming we see online. These tribal behaviors are, after all, some of the tools communities use to substantiate themselves for their members' well-being.

That's not because there's anything necessarily wrong with these communities, either. To feel safe and to communicate efficiently, people *must* have shared norms. Individuals and groups incessantly and instinctively attempt to establish such norms online, largely without stable success. We have few walls, little privacy, less tradition, no soft signaling, and more emboldened—often anonymous—interlopers. The online scrum is, in many ways, a battle for reliable community norms in spaces that hold many partially or fully incompatible people and groups.

In sum: we are living in simple software, and preferences collide. Deprived of gentle means for achieving mutual personalization, we cannot escape undesirable interactions and content without social costs. Painfully, we also become the objectionable other to people with whom we'd have perfectly rewarding, fluid, continually refined relationships in real life. Everyone must take everyone else in full or not at all, and if everyone is either *in* or *out*—of social circles, of scenes—community membership becomes a contentious proposition. Belonging becomes binary; total identification with a community is mandatory, and communities must

aggressively assert their norms and both protect and police their memberships. They punish non-compliance within and react against the other outside, as threatened communities do.

For people and communities, this has not only social implications but moral ones, as online spaces become zones of culture conflict in which we must judge and be judged. The “chilling effect” on expression is real; some individuals muzzle the selves they suspect aren’t universally palatable, while the brash come to dominate discourse. For systems designers, it is one of many problems that approach the political in nature. Many attempt to address the problem with increasingly legislative policies about what is and isn’t acceptable behavior. But who decides what’s acceptable is itself a political question.

One serious error is to think that there are “good” users and “bad” users, and that we need merely to provide reporting tools to allow the ferreting out and banning of the latter. While there are truly bad actors who must be removed, they cause a minority of clashes. In real world terms, crime is less common than incompatibility in its many forms. So social software designers shouldn’t aspire to be legislators of what’s “good” but rather framers whose systems allow individuals and communities to determine their own mores. This is a difficult challenge, but a mandatory one; as the Russian novelist Aleksandr Solzhenitsyn wrote:

If only there were evil people somewhere insidiously committing evil deeds, and it were necessary only to separate them from the rest of us and destroy them. But the line dividing good and evil cuts through the heart of every human being. ²

For designers of products with many users, it's crucial to understand not only the practical relativity of good and evil, but also that humans have many selves, some of which come and go during their lifetimes. A well-designed system—like a well-designed government—mitigates the costs of discordant differences while allowing individuals the maximum degree of freedom to be themselves, even as it encourages communities to form and benefit from their own norms and traditions.

Your uncle isn't an evil person, after all. But when you *must* judge him in full, he—like most humans—falls short of perfection. On the other hand, you know some of your opinions must irritate him. Do you want a world in which unanimity of opinion is required even for mere acquaintanceship? Of course not!

Still, seeing his posts bums you out, makes you feel argumentative, sets you off on vexing internal debates with imagined foes about issues you don't even intend to be thinking about. So: do you unfollow your uncle? Do you care how that makes him feel?

And what if, rather than an uncle, it's a friend or colleague, or a boss or mentor? And imagine this dilemma repeated for every relationship between every pair of

people! How will your community—whatever it is—achieve a safe and reliable composition that lets members “be themselves” without getting aggressive about intruders who don’t share your norms (aggression which may itself be norm-violating)?

Why do these ostensibly *social* systems make social life harder? And what can be done about it?

Patterns We Copy

Most social software is based on existing software patterns rather than how we live and coexist. Real-world social dynamics are so complex that we can hardly understand them, let alone imagine how they might be mirrored in, say, a user interface. Even if we were to try and match their complexity—presenting a user with hundreds of sliders, checkboxes, and options for responding to posts or reacting to another user—all we’d accomplish is overburdening her with administrative tasks. It would never accurately capture her full social sentiments, and regardless, it would be time-consuming and annoying.

Indeed most of our interfaces require explicit, conscious action, and that in itself is problematic for the replication of our full range of signals, many of which are, again, unconscious or ambiguous. Sometimes the precise mechanism of a signal is that its ambiguity—your uncle may wonder, “Does she *really* need a drink, or is she tired of my talking politics?”—permits both parties to interpret it in the most personally palatable way. Face-saving is important.

User interfaces are not generally well-suited for ambiguous signals, let alone unconscious ones.

But clever designs find ways around this. Consider the issue for a dating app: *How can we make finding a partner no more painful than it is in the real world, and hopefully less? How can we mitigate the anxiety of people in a delicate social situation involving approval and rejection?*

We can start by considering how people protect feelings in real life. One very common method is lying. Say you ask for a phone number from someone at a bar and get it, but it's fake. This saves face that night—while you're intoxicated, with your friends, in public—and allows you to process your feelings however you like the next day: "I must have been too drunk to hear the number right!" Even if you do feel rejected, it's still less likely to embarrass you than being rejected face-to-face; and besides, what can you do? Indeed, lying is a popular solution: "I'm seeing someone" also works in this case. We lie even to our friends: "Sure, I'd love to do that!" we say face-to-face, and later send the email "Oh my gosh, it turns out we have plans." And so on.

But lying isn't really supported in software. We can lie to other people *through* software—for example, all profile bios—but lying *to* software—having software operate with false ideas of what we want or think—isn't compatible with achieving utility. A dating app that people lie to about whom they like will not work very well!

Another solution is to use intermediaries: "Pat, can you ask Lee if Jesse likes me?" Long after grade school, forms of this

persist. We attempt to validate whether we're liked (or not) through a third party in part because intermediaries translate and soften signals. But dating services in which you involve your friends as wing-people are rare.

The answer provided by the double-opt-in mechanic common to Tinder and many other services borrows from both of these real-world solutions: Have an intermediary systematic function depersonalize some of what happens, rendering signals ambiguous. This way, no one can know that they've been rejected. Individuals can be more at ease and the community will have fewer disturbances caused by the social costs of approval and rejection.

In effect, this outsources lying and uses a third party to soften the blow. When you "approve" of a person but never hear back, it is the service's refusal to distinguish between "people who haven't seen you" and "people who reject you" that saves you face, as though the service is giving you fake phone numbers. You can only wonder: "Was there just a harmless miss, or was I rejected?" This is an outstanding solution, because it not only restores but actually amplifies the ambiguity of the real-world social process. In truth, it's hard to approach people and ask for numbers. It's often the case that we can *te//* when we're liked or disliked; and with mobile phones, creeps test phone numbers right away anyway!

So this solution enhances the capacity of individuals to make free choices with reduced fear of social cost. In this sense, these services improve on reality by taking the

solutions we use in the real world, abstracting them to consider their consequences, and then figuring out how software can achieve the same consequences with different mechanisms.

Translating Mechanisms

Let's try to generalize the problem for any social software:

How can we enable mutual, painless personalization of social experiences online? What features of evolved real-world individual and community social dynamics can we replicate with current technology?

There are countless possibilities at many levels of design. I'll mention one abstractly: systems should be able to fluidly recognize and concentrate communities of users with soft borders, permitting less explicit affiliations and departures but still supporting zones where community norms abide. There are systematic and user-interface problems to solve, but doing so would likely reduce the community defining and protecting behaviors that make public spaces online so problematic. Networks in which we can be our bar-selves, work-selves, gossip-selves, activist-selves, parent-selves, critical-selves, and other-selves without interference—city-like networks in which the bar and city hall aren't the same space, but also aren't private, rigidly defined, members-only spaces—are hard to imagine visually but will exist someday.

In the meantime, there are other technologies being used to solve these sorts of problems. Among them, machine-learning personalization is the assistive intermediary

function *par excellence*. Best-known as what powers Facebook's "Top Stories" news feed, machine-learning personalization aggregates hundreds of explicit and implicit signals, including some that are subtle or even unconscious. It acts as the intermediary whom we blame or credit and whose role lessens the social cost of our preferences. It continually explores our preferences and refines its model as it (and we) change over time. Meanwhile, it requires little to no administration and is fundamentally diversifying, as it creates maximally individuated software experiences.

It achieves this diversity through a process very much like that used in real-world social situations. When a machine-learning system first "meets" you, it must make some truly random guesses, unless there's any inherited contextual information from the start (for example, you've connected another service that it can mine for data). As it learns about you, it can increasingly relate you with cohorts (based on vectors of signals). It can also continually introduce test content in the proportion you seem to favor, from proximate or orthogonal cohorts or even randomized. This is more or less how humans operate when they meet, of course: some inherited data—perhaps an outfit or an introduction—guides initial explorations, but as we form a mental model of whom we're dealing with, we get better at guessing whether they'll enjoy talking about sports or politics or technology or food. If we're smart and decent, we don't stereotype; such signals are directional, but not exclusionary. So too with machine

learning, which never “finishes” learning about each user or reduces her to a flat, unchanging profile.

Indeed, machine-learning personalization of content is possibly the most democratic editorial process yet deployed at scale. In a well-personalized feed, no one’s conception of what’s best matters but yours, and that remains true even if you don’t know what you like or lack the time, ability, or interest to describe all the valences of interests and habits that constitute your full identity. A system with sophisticated machine learning has, in effect, deployed an attentive assistant whose priority is to find out what you care about, which people you want to hear from, what content you find objectionable, and even how your moods and tastes vary with time and context.

But machine-learning personalization has been controversial in the design community, partly because of confusion about how we socialize in reality.

Firehose or Fascism

Critics of machine-learning personalization tend to make one of three claims.

First, some fear that personalization concentrates “control” in the hands of the network owners, who tinker with opaque algorithms whose details we can never know. But networks owners don’t want control; they want our use and attention. Personalization can be computationally costly, but companies choose to bear those costs because they must provide users with good experiences—whatever

that means to each of us—or we'll find other networks. Machine-learning personalization doesn't mean that networks—let alone persons working for the network—decide what you see; it means that *you* decide what you see. A bad feed, which through omission censors content users want, will eventually drive us away from any network, no matter how popular or powerful.

A second view is that even if we control our feeds, personalization partializes our view of the world, trapping us in “filter bubbles” that deny us access to novel or dissenting views. However, this is mistaken too. Personalization is a constant, daily fact, not a new technological phenomenon. We all adjust our signals, our environments, our social circles, our media intakes to be as we want, and typically we only gainsay the choices of others (especially others whose opinions we disagree with). But no one should cede control of their bookshelves, evenings, television remote, party invitation list, or the like to an imposed conception of “what a person should experience,” dictated by these critics or anyone else.

Furthermore, non-personalized social software is not an option: as networks scale and every user's graph grows, simple chronological feeds become unmanageable. We can burden the user with the social and administrative costs, or we can have systems bear those costs for them, as traditions and norms do in the real world. But we cannot prescribe the social and informational diet, as it were, for others, and it's especially important that designers remember this; we are

not arbiters of what's good; we create so that humans can be empowered to pursue their own ends, not ours.

The third major concern is that machine-learning personalization is difficult, and poor execution results in frustrating software, content, and social experiences. This is absolutely true, and will remain an issue—as it is on Facebook, for example—until machine-learning solutions improve, are standardized, and are commoditized. But this is true of everything in technology, and these problems are soluble.

The Illusion of Control

Machine-learning personalization is just one means of achieving real-world ends in software, of course. But it's illustrative of how open-minded we should be in evaluating technology. It's crucial that designers think seriously and pragmatically about consequences rather than mapping their reactions to moralizing narratives. The idea that personalization is about corporate or political control is an emotionally satisfying but inaccurate one. It ignores how humans, human societies, and machine learning all work. It also ignores the problems personalization is trying to solve: to help people navigate an ocean of content and many types of social connections.

If some of our experiences have made us wary of personalization, most of us have had moments where the opposite is true, too. How brittle personalization is—how dependent our experiences are on it working well—is itself

variable between products and designs. How much personalization interferes with a user's cognitive model of your software, for example, is something to think about and mitigate.

But the time when there were primarily power users online is over. Most users do not want the “control” of RSS and Twitter lists and blocking, muting, and unfollowing their fellows. Nor do they want *our* view of what they should read, whom they should know, or how they should act. They want to be empowered to find the information that matters to them, share and interact with the people they choose, and experience the world on their terms. Not only does personalization *not* thwart information diversity, it helps diverse individuals live and learn as they please. And empowering people with that kind of control should be—for designers who favor democracy—a lifelong goal.

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1. Walt Whitman, “Song of Myself,” *Leaves of Grass* (1855). ↩
 2. Aleksandr Solzhenitsyn, *The Gulag Archipelago: 1918-1956* (WestviewPress, 1974). ↩

LESSON

MILLS BAKER

In early 2005, unsure of what to do with my life and in desperate need of income, I took a job as an agent in a call center. It was an inbound B2B operation, so each day I clocked in, sat down, indicated to my phone what “state” I was in—ready!—and took around 110 calls from businesses all over the country over the course of eight hours or so.

While I was surprised not to hate it, friends and family were closer to shocked. I had never seemed to anyone likely to enjoy a business or corporate environment of *any* sort, let alone a call center, typically considered the worst imaginable place to be: a labyrinthine “cost center” of cubicles whose low-wage occupants are basically despised by their employer because nothing they do makes money. Indeed, because it’s viewed—incorrectly—as nothing but an expense, a typical call center is micromanaged to wring maximum operating efficiency from the people and machines inside. Often, there’s no choice for leaders: failure to control costs can result in off-shoring.

But I loved the people I worked with, who were fun and sincere in their desire to help customers: an oddity that forever imprinted the import of culture on me. From the first day, goofy passion for service abounded in leaders and peers. It was not immediately contagious, but it gradually

became a natural value. And helping people with even trivial things feels good. Weirdly, we had fun. I wound up working there for five years, moving up and eventually managing operations.

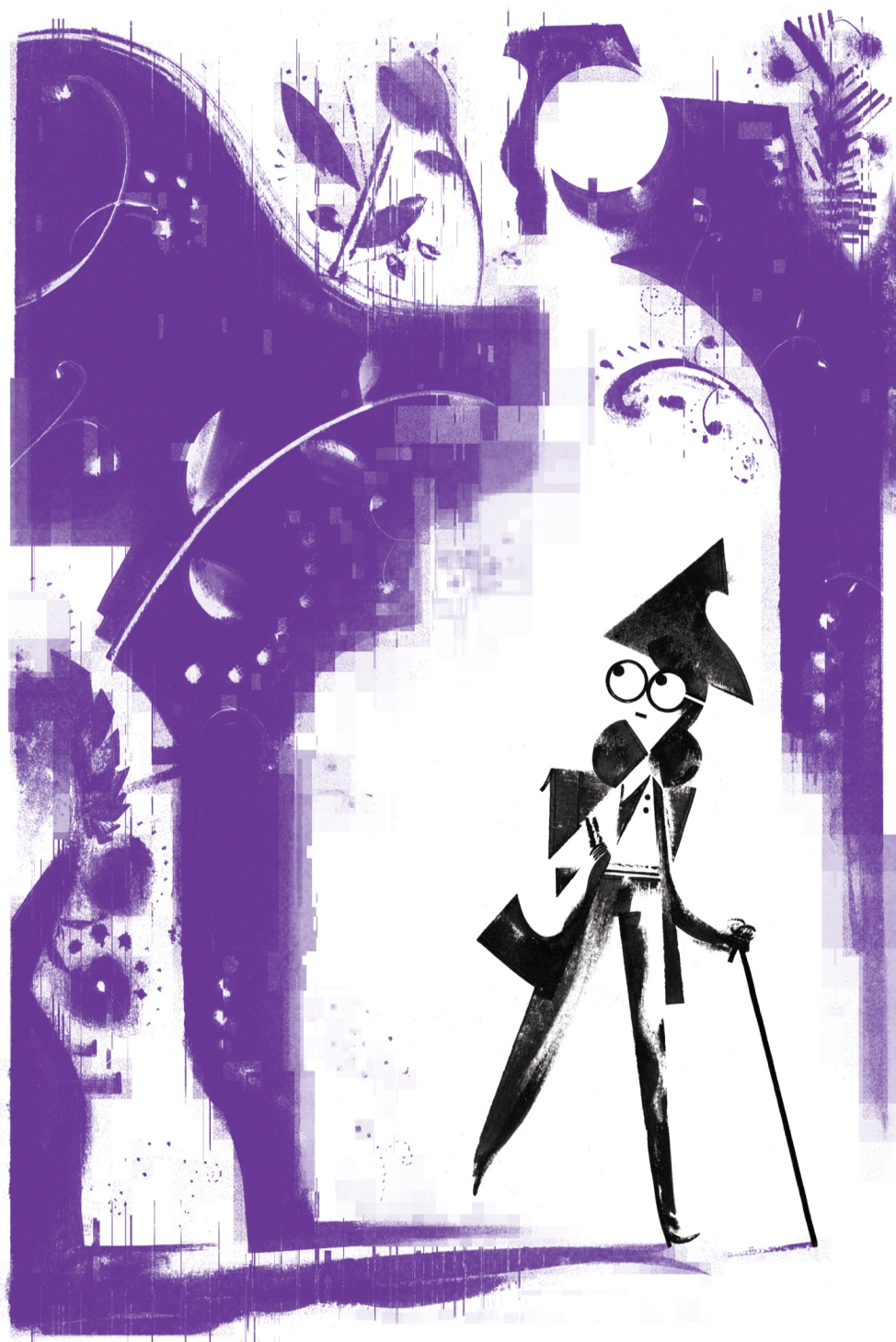
If you work in a call center, you have precise allotments of time for absolutely everything you do; all your activity is tracked by the phones, the computers, and badges, the doors, the cameras, and the IT systems in general. Each day, each week, each month, you see how your average call time stacks up, whether your QA scores took a dive, whether you're using too much time on bathroom breaks, and so on.

Because of high churn, policies must be binding and comprehensive; mitigating the possibility of unfairness, corruption, or liability is a priority, so managerially disempowering "automatic policies" are favored. I saw many people get fired against the will of their bosses, an upsetting absurdity. But without these policies, favoritism, inconsistency, and simple human variance meant perceived or actual unfairness.

Of course, making policies for every potentiality is the essence of bureaucracy. When systems cannot be adaptive, they must be prescriptive. The system cannot be adaptive to the single mother a few minutes late because her daycare had a fire alarm. Otherwise, the young man who just doesn't seem to wake up on time will sue when he's let go because of the inconsistent treatment. Given how many people pass through a call center in a year, this means that lawsuits can become a major cost. So policies proliferate.

I hated these policies as an agent on the phone, naturally. As I moved up, I hated having to administer them, debate them with other managers, apply them. By the time I had nearly 100 people reporting to me, I was in regular wars with HR over policy enforcement. I knew and liked my people, so I made exceptions when I deemed it sensible, which was often. In doing so, of course, I was making the organization inconsistent, 'unfair'; I was increasing its liabilities, and in a diffuse way the difficulty of it remaining viable and my friends keeping their jobs. Thankfully, no feedback loops were short enough for this to trouble me. Moreover, I generally felt that quality service demanded a humane culture which respected individual realities more than bureaucratic mandates. So I had my own rationalization for ignoring policies, and the performance of my teams—in my opinion—validated my approach.

Still, I always knew that my rationalizations, even if somehow true, were not why I did it. Mostly, I liked being *liked*. It seemed obviously more important than policies or promotion that I not disappoint the trust of people I considered friends. We had achieved something like a little community, many of us there for years, and desired accord with one another mattered to us deeply. Looking back, the tension between mitigating externalities through centralization and policy as opposed to decentralizing control in the hopes that successful, useful communities will form seems fundamental to me. In real systems of scale, there will always be real trade-offs.



MESSAGES TO THE FUTURE

HEATHER RYAN

As a young artist, I was driven and aching to communicate my perceptions of the vast and intricate world around me. I was known to thievishly appropriate any and all materials that held some promise of articulating my vision. If it spoke my language, I used it.

My art knew no bounds of material “appropriateness” and it certainly didn’t exist anywhere but the present. I created art to satisfy the very immediate need to communicate in my own language. I gave very little thought as to whom I was communicating or even to how far in time my message could ripple.

In art school, however, things were different. I sat in art history lectures where I learned about art that was created hundreds and thousands of years ago. I was taught how to select materials that would survive through the ages and would serve to extend my message to future generations.

Being the contrarian that I was, I rejected what seemed to me an egotistical extension and instead became fascinated with the concept of ephemeral art. I designed a number of performances that were intended to not be recorded or documented, or to speak to the future in any way other than through human memory itself. I designed edible sculptures that were to be literally consumed and physically digested. I

was very much enamored with the idea of speaking to the present, and only the present.

During this time I also started my career as a print and web designer. I was thrilled by the connection between abstract code and the immediacy of communicating directly to thousands of people I didn't know. In 1998 I was hired by a university agricultural department, where I transferred print journal material on topics like best cotton strains and beef bull breeding to the department's new website. Doing so moved the material from its archival form to one that facilitated access. In comparison, the web was very much about sharing and finding information *now*; but even back then, our notion of "now" on the web was much longer than it is today.

To Capture a River

I can't even begin to wrap my head around how quickly a moment goes by on the web today. Back in the early days of the web, there was an actual sense that one could read just about everything on it over a long weekend. Then, websites were more static. They consisted mostly of linked pages that were sporadically, if ever, updated. Even the old bulletin board forums seem slow and steady compared to the raging flow of thoughts and facts rushing by on the web today.

Captured moments of our history used to be monolithic: monumental and made of stone. Our archived history has traditionally been built around pivotal moments, leaders, or grand representations of an age. We go back to our archives

to learn about wars, inventions, kings, and cathedrals. These recorded “moments” we look back on span years, decades, and sometimes centuries. The shorter, lived moments of day-to-day thoughts and experiences were rarely recorded.

Today connected society is so able to record each lived moment, and at such a granular level, that the record is beginning to supercede the experience itself. Not only are we able to record the moments of moments, but we are able to instantly broadcast these moments for other connected people to consume across the globe.

We are also living in an age when we are constantly connected, and where it takes only a few seconds to open up a portal to look into the constant flow of these broadcasted moments. This ever present, ever flowing river of recorded events is changing not only the way we live, but also the way we collect and preserve these moments as history.

History, as the future will know it, is happening today on the web. And so it is the web that we must capture, package, and preserve for future generations to see who we are today. But how do we do this? The web is made up of billions of molecular-sized moments that are constantly rushing past and being superseded by newer and smaller units of recorded time. How does one capture such a thing?

Archiving the Ephemeral Web

The web is the grand realization of my youthful infatuation with ephemeral art and the enigmatic *now*. Since then I have moved into a career that revolves around preserving

access to captured moments of history, and I am coming face-to-face with some of the impracticalities of my early idealism. Looking at the web as a phenomenon or thing in itself, it's a beautiful wonder; but capturing it and documenting it can sometimes feel like a nightmare. On most days, though, I find it to be a juicy and delicious challenge. Luckily for us, so do quite a few other people.

One of the first visionaries in this area was Brewster Kahle, who founded the Internet Archive in 1996. The Internet Archive is home to the Wayback Machine, a digital archive of website snapshots from 1996 to now. If you haven't yet visited the Wayback Machine, I invite you to take a minute to look at some late 90s websites. *Boingboing.net* and *wired.com* are good ones to start with.

Less than twenty years after these early websites were created, there is a palpable sense of history in them. For me there is a sense of nostalgia, since I was creating my own sites at the time. For those who were very young or not yet born, these sites tell stories of a time unknown to them, when the internet was new and vastly uncharted. It truly was like the Wild West in those days.

If you dig a little deeper into the Wayback Machine, you will notice that not every day is covered for even the most prolific websites. In the early years of the web, this probably didn't matter so much, because sites weren't typically updated as often as they are now. If you look at some sites in 2015, you will see that many more days are covered; some sites are captured several times a day.

Clicking links in archived web pages, especially older ones, often leads to a page that informs us that there is no archived copy of the site or page we are looking for. Many web pages have holes in them, where images are now missing. Charmingly, however, a number of the old animated gifs are still blinking back and forth through their cycles. They are still moving, still alive in some sense, but at the same time, eerily abandoned.

It's easy to see how difficult it is to capture the whole of the web; every day and every moment that it's changing. What Brewster Kahle and his colleagues are doing is at the very least herculean. There is no way to capture the web from above, like you could take a picture of an ocean from a plane. You have to take snapshot after snapshot from within as it goes by, and piece it back together like a stop-motion film.

Archivists want to preserve history as it is wherever possible, but in the case of archiving the web, it's not as simple as taking periodic snapshots and re-hosting them. Even collecting as much as they do, the Internet Archive is not able to collect everything or to preserve all of the functionality built into all of the sites on the web.

Unsurprisingly, there are a number of legal complications with archiving websites and a number of website owners who prefer that their sites are not preserved in perpetuity. Adding to this is the challenge of keeping up with all of the technological changes and innovations that are happening on the web every day. Over time, these challenges are only

going to punch more holes into the already patchy record we have.

To Innovate or to Preserve

Innovation is one of the most celebrated concepts in United States culture. As a child I was inundated with stories about famous inventors, and I listened rapturously as my teachers diedied them. I don't know if these stories made me want to be an inventor, so to speak, but they definitely fueled me in my constant search for the best and most innovative solution to every activity in my life.

I found these stories rattling in the background as I mapped out the most direct route across campus, or the most efficient method to make a sandwich. I would maximize efficiency in everything I did and would often imagine devices and contraptions that could make it even more efficient. As an artist, I pushed myself to never follow the status quo. It was my goal to always do things different and better. I wanted to break out of the boundaries of the expected and everyday. I wanted to change the world.

This same type of thinking is the driving force behind the endless stream of technological innovation we celebrate and grapple with every day. As a society, we are living through an exponential growth of technological advances. It is a brilliant and dazzling time.

Unfortunately, the charging rhino of innovation is at the very heart of what is making it so difficult to preserve the web and our other digital creations. As new technological

innovations rise up, the old ones fall further and further away. Each new iteration of hardware and software takes us steps away from the older ones. Each step we take away from our older technologies and their familial operating systems, connecting cables, file formats, and browsers, the more difficult it becomes to return to them.

One of my favorite teaching props is an old eight-inch floppy disk. Just last week, I held it up during a lecture and people in the room actually gasped. I asked them if they could tell me where I might go to read what's on the disk. The only person who knew was a fellow digital preservation researcher whose job it was to find a disk reader for some eight-inch floppies that were donated to his university's digital archives.

My three-year-old laptop has a CD/DVD drive, but newer models don't. When is the last time you bought a CD? How long until the crowd gasps in awe when I hold one up during a lecture?

Technological innovation is a strong driving force in our culture, and one that I don't expect to slow down. I hope it doesn't. It is a beautiful and thrilling experience to innovate. But innovation creates real tension with our ability to access our recorded history. And the more complex a technology (or website), the more difficult it is to access over time.

Ultimately, it's up to the librarians and archivists to keep up and become innovators themselves, which believe me, I find to be a wonderful challenge. But, just as my professors taught me in art school, wise creators are ones who imagine

their creations in the future and create them in such a way that they may make it there.

Bridging the Interstitials

As digital archivists we have been tasked with reaching beyond the moment of gathering already created content and into the moment of creation itself. We sometimes find ourselves at loose ends, primarily because there has been an historic disconnect between the archivist's place on the digital content life cycle and the creator's. If we consider the life cycle as a truly cyclical thing, creation and archiving are friendly neighbors, but in reality we are facing different directions: the creator pitching into the future and the archivist receiving from the past.

The challenge now is figuring out how to turn around once in a while and face each other. The questions we need to ask now are: 1. How can websites be designed to be stewarded into the future as remnants of the past; and 2. In what ways can archivists adjust their practice to accommodate the rapidly changing landscape of information sharing on the web?

Until recently, it seems that the historical aspects of the web haven't entered much into the process of web design, policy, and innovation. But did you know that a large majority of web users think that when sharing their thoughts, images, and videos online they are going to be preserved in perpetuity? No matter how many licenses the general population clicks "Agree" to, or however many

governing policies are developed that state the contrary, the millions of people sharing their content on websites still believe that there is an implicit accountability that should be upheld by the site owners.

In well-run corporations and government agencies, there is an acknowledged relationship between records creators, records managers, and archivists. When things are running properly, all three work together to ensure that the handoffs between them are as smooth and efficient as possible.

Along with the web as we know it, there has also emerged a new model for information creation, sharing, management, and archiving. Unfortunately, however, each of these things happens more or less independently, with ad hoc processes for transferring from one stakeholder to the next. Everything in this space changes so quickly that information management and archiving has developed into a reactionary practice. The Internet Archive is a reaction, just as the Archive Team and the International Internet Preservation Consortium are reactions.

Relatively speaking, the web as information infrastructure and commons for global human interaction is very new. When new things jump into existence, the processes to bridge the interstitials tend to take a while to catch up. Clearly, website creators are stirring to the fact that their creations are historically important and that there are organizations of professionals scrambling in the trenches to steward their creations into the far future.

Right now, just as website creators are coming to this awareness and web archivists are finding some footing, is the perfect time to pause and turn to face each other. We can start asking each other the important questions about who we are and how we operate. Most importantly, we can join our innovative powers to design a stronger, sleeker bridge between our spaces.

LESSON

HEATHER RYAN

My father is a quiet, visioned, and deeply intelligent man. When I was a child, he taught me Morse code, BASIC, and how to read the colored stripes on resistors. Scattered amidst his plans of Tesla wind turbines were his plans to build an adobe house by hand. When I was in second grade, he moved us all out to the base of the Organ Mountains, smack in the middle of the north Chihuahuan Desert, where he started making bricks of red clay and straw.

Just on the other side of the Organ Mountains was the White Sands Missile Range and the White Sands Test Facility. It was not uncommon that large jets would come streaming overhead, faster than the speed of sound. If you were around and cognizant in the 1980s, you may remember the undulating and ever-present threat of nuclear war between the United States and the Soviet Union. When the supersonic aircraft would fly by, we would hear a tremendous boom as the sound of their movement caught up to us. My brother would often get very serious when this happened, telling me that it was just a “sonic boom,” but that it could also be a nuclear attack. We would then go hide under the kitchen table and wait for the fallout.

Like many children living during those times, there was a very real possibility in our minds that the end times could be

just around the corner. Being a planner, I spent many hours imagining different scenarios in which the population of Earth was decimated in a nuclear holocaust. In many of these scenarios I was a lone, miraculous survivor, left to fend for myself. I wasn't too worried about this because in my mind I was the queen of the desert. I knew all of the trails like the back of my hand. I had mastered the art of diving unscathed, at top running speed, through barbed-wire fences. I built numerous secret forts in mesquite and creosote bushes. I could catch lizards and "horny toads" by hand faster than anyone around. I was a scrawny, scrabbly, nine-year-old survivalist and I knew that I would be just fine.

Most often in these extended fantasies, I would leave the desert, make my way to the biggest library I could find, and set up camp within. It was my greatest dream to live in an abandoned library, with nothing but time and books. I dreamt of reading every single book in the library and knowing everything there was to know about life and existence.

Walking now in my mind through that imagined landscape, I feel the echoes of a civilization lost. As a child I delighted in the notion of unfettered access to the world of recorded knowledge, but now, as an adult, that world feels somehow vacant and hollow. Something very important was missing there. What was it?

I get this same sense as I am "walking" through archived websites. I wander through the walls of text and the blinking, animated gifs. Old, flashing headlines remind me

of flashing neon in some abandoned city. The old websites seem haunted by the ghosts of the people who created them. I'm sure that most of the people who created the sites are still alive, but it's the ghosts of who they used to be, of the time we used to live in, that haunt the pages. I am especially struck by this when I visit web pages I created in the late 90s. My ghosts are captured there in the glowing, rendered bits.

If this is the case with mostly static websites, imagine then what it's like to wander preserved virtual worlds. I haven't been to Second Life in a while, but I shudder to think of what it would be like to visit. What would a preserved World of Warcraft be like when there are no people filling the space, chatting, fighting, building? What will Minecraft be like in twenty years?

As archivists, we are tasked with preserving the past and the present for the future, but how much of the true picture can we actually preserve? It seems that despite our best efforts, the most we can possibly accomplish is to save the files and the spaces where only the echoes and reverberations of life ripple out from the screen. Just like my end-times fantasies as a child, I realize that even with the wild abandon of having access to everything recorded, it's just not the same without the people.



PUTTING WORK IN ITS PLACE

KATE KIEFER LEE

Ricky Scott is a pitmaster in a place called Hell's Half Acre, South Carolina. He's also the Director of Public Works for a nearby county, and in his spare time, he serves as a volunteer firefighter. I learned about Scott from a short documentary called *Thursday in Hell's Half Acre*, made by 1504 Pictures for the Southern Foodways Alliance.¹ "I have a day job, but after four o'clock on Thursdays I take off and go over on down to the barbecue business," he says in the interview. Once a week, he smokes a pig and serves it to his neighbors. He's open for three hours only, and he sells out every time.

There are a lot of people like Ricky Scott out there, splitting their time between things they need to do and things they want to do. He could quit his day job and try to live the pitmaster dream, but the Thursday-only barbecue business is working out just fine.

At some point in your life, someone has probably told you to "follow your dreams." Maybe you've said it to someone else. It's the quintessential inspirational advice. We tell our kids to follow their dreams from a young age. We say it in songs and commencement speeches, hand letter it for posters and journal covers. Most of the time it's empty advice, designed to trigger emotion but not action.

These days, “follow your dreams” has sister phrases like “do what you love” and “quit your day job.” If you listen for these mantras, they’ll lead you to an entire genre of storytelling in creative industries, particularly in web design. The stories come in different forms: essays, marketing campaigns, conference talks, interviews. They’re usually formulaic, involving someone turning a personal experience into motivational advice for a wide audience. They are treated as gospel.

These stories can be deeply inspiring. Now, more than ever, people can direct their own paths and make a living from creative work. For many, the barrier to starting a business and selling your work is low. You can make a website in an hour with Squarespace. Raise thousands of dollars in a month with Kickstarter. Begin selling your products tomorrow with Etsy. Share your work instantly on Twitter, and measure it all with Google Analytics. There’s so much possibility for entrepreneurs and freelancers. If you have the right combination of resources, flexibility, and skills, you can start following your dreams right away.

For someone who knows they want a career change, is in the position to make one, and just needs to take a few steps to get there, motivational advice works. Personal testimony can be transformative. Finding a tribe of like-minded people who put a lot on the line to pursue their passions may be just the push someone needs to move forward.

But where does that leave the people who don’t have a calling or enough resources? To drop everything and do what

you love, you need a safety net, flexibility, and a passion that also happens to be a marketable skill. It's a beautiful thing when someone turns the fire in their belly into a fulfilling career, but the stories we tell about creativity don't apply to everyone.

It's time we examine the messages we're sending about creative fulfillment and explore new ways to talk about our work.

Opening Up the Narrative

Work is one part of life. It plays different roles for everyone. There's not a single, teachable path to professional fulfillment. Translating "this worked for me" into "you should do what I did" is an anecdotal fallacy that can be as damaging over time as it is inspiring in the moment. When delivered without empathy, this kind of advice isolates people and devalues the kind of work most of us do every day.

Our world is much bigger than our industry. The concept of work, and expectations for professional autonomy and creative freedom, completely change when you shift your gaze outside the design community. Even within the mostly insulated design world, there's nuance. There are varying levels of privilege. When we speak to people in our industry, we must consider the effect our words have on those who have chosen, or have had no choice but to take, different paths. And creating a more inclusive, more diverse, deeper-

rooted design community requires—at the very least—speaking to people outside of it.

If you have a success story about pursuing your passions, choose language that's sensitive to people who are different from you. You could make a command like “quit your day job” or “do what you love,” or you could soften the tone by saying “I quit my day job” or “here's what worked for me.” Opening up our language will open up our audience.

It's helpful to tell the whole story, including victories, failures, and all the vulnerable spots. Sometimes we get squeamish about the financial side of conversations about work, but it's important. If you cashed in your retirement account, had resources from a past job, or called on an existing network of people to help fund your dreams, that's part of the story. Stories of artists who quit their full-time jobs and put everything on the line are compelling, but the same decision may be irresponsible for different people. We can glorify risk taking, but the risks should be calculated.

We can also explore new places to share stories about creativity and passion. I've witnessed some of the most inspiring conversations about work at neighborhood events, political functions, or standing in line somewhere. I've even changed my perspective by following people who aren't like me on Twitter. It seems so simple because it is. We all benefit, as individuals and as a community, from actively seeking out perspectives that are different from our own.

The Myth of a Calling

Mantras like “do what you love” and “quit your day job” often presume the listener has one clear creative passion that they can ultimately profit from. But not everyone has a calling. It’s a myth that in order to be truly happy, you need to find and pursue your one true passion. Many people have joyous lives filled with interests and hobbies and people they love, but not passions.

Even if you are blessed with a singular passion, it doesn’t have to be your full-time job. Some people aren’t comfortable turning their passions into a career. Maybe they want to keep their passions for themselves. A writer or artist who does intensely personal work may choose not to turn it into a business. Maybe they practice their passion as a way to relieve stress, and the experience would change if they made it their job. Maybe their full-time job funds their dreams, and they want to pursue their passion while relying on a steady paycheck. Or maybe they love their job very much, even though they have deep interests outside of work.

Some people have passions that are inherently unrelated to work. There are many among us who’ve always wanted a family. They go to work every day; and every night, they follow their dreams home to their families. Passions can also take the form of hobbies, fulfilling people emotionally or intellectually outside of work.

We encourage children to explore all of their interests, try new experiences, and embrace change. But at some point

during young adulthood, a switch flips and you're expected to know what you want in this life and go get it. This perspective is reinforced in school: in your first year of college, it's time to choose a major and think about your career goals. Change becomes uncomfortable. What if we show ourselves the same grace we show children? People who deeply love more than one thing shouldn't feel pressured to choose a dream.

The myth of the calling leads people to believe that if they answer the call, they'll reach some sort of creative enlightenment that transcends work and transforms their life. That scenario is possible, but so rare.

You Can't Always Do What You Love

Of course, you will never do only what you love. To change the narrative around creative careers, we have to start with a realistic perspective on work. Most people spend a majority of their time working. And just like the other major parts of life, work is sometimes fulfilling and sometimes not. There is gray area. You can love your job most of the time. You can kind of pursue your passion. You can stand behind your work even if it's not your dream job.

It's helpful to look at your career from a holistic perspective, made up of different tasks and components with varying levels of meaning. For an art director at a publishing company, work may look something like this: 60 percent design and illustration, 20 percent meetings, ten percent writing, five percent travel, and five percent budget

spreadsheets. Similarly, a potter has to perform a lot of tasks that are unrelated to pottery but related to her pottery business: Sending invoices, financial planning, maintaining a website, hiring and managing employees.

Even for someone who practices their passion as a career, it's not going to be 100 percent passion all the time. When you look at it that way, pursuing your interests by freelancing isn't that different from pursuing your interests by working for a company and doing something you like most of the time. No matter the career path you choose, you should expect both sacrifices and rewards pretty much every day.

It's always going to be a mix. So you weigh the pros and the cons, including tangible things like pay and time off and intangible things like friends at work and pride of ownership. And there's no shame in weighing the paycheck heavily; we all work for money.

Making Work Meaningful

I love my job, but I wouldn't say I do what I love the most in this world. I care about the company, my coworkers, and the people we serve. I'm invested and engaged at work. But if my job ever becomes my deepest source of happiness, my life will fall out of balance. This is my truth. It may not be yours.

A 2015 Gallup poll of employee engagement said "the percentage of U.S. workers engaged in their jobs rose from an average 31.7% in January to an average 32.9% in

February.” ² This is a three year high. Most people are either indifferent or actively disengaged at work. That’s a problem that we can help solve.

Here’s a more achievable goal than “follow your dreams”: be engaged at work. Look for meaning in it. This is hard sometimes. Being engaged at work *takes work*, and it’s an ongoing process. Turning a creative passion into a job is certainly one way to find meaning in your work, but it’s not the only way.

I’ve seen friends become disillusioned because early in their careers they told themselves that by working at a tech company they were going to change the world. You may not be changing people’s lives on a large scale (or you may be!), but are you changing the way people work? Are you improving someone’s day, making it easier for them to do their job, or giving them information they need? Chances are, you’re helping people. You can find purpose there.

No work is wasted. Even if you’re not in your ideal career, you can start taking small steps toward it right now. You may be doing that already, without realizing it. If you learned a new skill, met friends or mentors, or became a better communicator, then your imperfect job served a purpose.

What’s meaningful to one person may not be meaningful to another. The more we can align what we value with what we do, the happier we’ll be at work. Someone who values efficiency, consistency, and predictability may like working in production. Someone who values creativity, independence, and adventure may prefer working as a

freelance designer. You can be yourself at the office if your job is in alignment with your values. It's a joy to bring your whole self to work.

So, instead of asking ourselves what we want to be doing all the time—because we'll never do only one thing—let's ask some more practical questions: What do I want to do more of? What do I want to do less of? Can I stand behind my work?

Room to Grow

People evolve and passion can be transient. When you ask children what they want to be when they grow up, they say things like astronaut, teacher, movie star, or president. But when they actually grow up, figure out who they are, and hone their skills, other options become available to them. Your dream one day isn't the same as your dream ten years later, when you know more and have access to more.

Following your dreams around can get complicated.

Even if your current job is not your final destination, it can mean something to you. Even if you're not in a field related to your personal interests, you can be happy and fulfilled at work. And if you're working to pay the bills so you can take care of your family, that doesn't mean you're denying your dreams. It might mean exactly the opposite.

"Follow your dreams" sounds nice, but it's almost always more fulfilling to follow your needs.

I can't stop thinking about Ricky Scott in Hell's Half Acre. Rewatching the documentary, my respect for him grew

deeper. Every day he goes to work at the county office and does what he needs to do. As a firefighter, he volunteers his time doing hard work that matters to him and his community. And on Thursdays, when he's doling out pulled pork on Styrofoam plates, he's simply doing what he loves. He's arranged his life in a way that suits him. It's malleable, can change at any time, and it's not for anyone else to replicate. He has financial and emotional needs, and his abundant life fulfills them. Ricky Scott's work does not define him.

"Some day I may go full-time with barbecue," he says in the film. "But so far, rather than doing that I'd rather keep it like it is right now. I put one hundred and one percent in it, and make sure it goes on as long as I can do it."

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1. [*Thursday in Hell's Half Acre*](#), 1504 Pictures for the Southern Foodways Alliance (2015). ↵
 2. Amy Adkins, [*"U.S. Employee Engagement Reaches Three-Year High,"*](#) *Gallup*, March 9, 2015. ↵

LESSON

KATE KIEFER LEE

Gin-soaked olives get me every time. One taste and I'm transported back to my early twenties, having dinner with my grandmother. She used to order extra olives with her martinis. She'd line them up on a cocktail pick, dip them in her drink, and hand them to me. I'd savor them, one by one.

We could sit there for hours. We'd talk about my work, and she'd fill me in on all the latest gossip at her retirement home. She'd tell me stories about delivering codes in the Coast Guard and the years she spent teaching. Sometimes she'd talk about her darkest days, living with an alcoholic husband, eventually leaving him, and surviving breast cancer. She always had some kind of advice for me. We loved each other's company.

When she got too sick to go out for dinner, she said she missed her martinis. I think it was the ritual she missed more than anything. So my husband started making them for her in her room. He'd pack up the liquor, a shaker, and a jar of olives, and he'd make us all a round. I have this picture of my grandmother in her hospice bed, breathing tubes in, holding up her glass and just barely smiling.

She's gone now, but every once in a while my husband will order a martini with extra olives. He'll put them on a

fork, dip them in his drink, and wink when he hands them to me. I think it's his way of saying "I loved her too."

And with the gesture, he gives me a memory. A moment with my grandmother. No story, no photo, can take me back to that time with her like the taste of a gin-soaked olive. One little olive in the right place at the right time, and it's as if she's at the table with me. The taste connects the past to the present in a way I'm never quite prepared for.

I've been experiencing nostalgia more and more lately. It can take over any of the senses—a taste, a smell, or a song can bring on memories so vivid they feel like dreams. The older I get, the further back they go. You can't stop time, but you can hold on to it.

Every once in a while, I'll hear a song or pick up a scent that brings back an experience I haven't thought about in years. It makes me wonder what purpose these memories serve. Maybe they exist to comfort us. I get the strongest nostalgia during seasons of change, and I most often remember simple, happy times.

You can't force nostalgia, and you surely can't escape it. It's a strange gift that way. Our brains record moments so we can relive them later, and we subconsciously assign meaning to sounds, smells, and tastes that serve as signals. When we get the signals, we go back to those places.

We have so little control over what our brains are recording in the background, and we can't always predict when we'll experience the memories. Maybe the best we can

do is be present, pay attention, and try to give our brains something good to record.

I had the best time at dinner with my husband the other night. The weather was nice and the drinks were strong, and we were making plans. I was so content. At some point between dinner and dessert, I looked around in what felt like slow motion and thought, *Will I remember this moment? What will remind me?*

AUTHORS

Kelli Anderson

Kelli Anderson is a designer who is interested in things that don't behave as expected. A creative resident at Adobe, she is currently focusing on design's ability to highlight surprising possibilities hiding in plain view. She is the author of *This Book is a Planetarium*, a pop-up book of functional things.



Mills Baker

Mills Baker is a product designer from New Orleans who works at Facebook. He writes about technology and design on [Quora](#) and on his blog, [Meta is Murder](#). When not refreshing feeds, he reads and takes care of his pets in San Francisco.



Jessica Collier

Jessica Collier is a writer and perennial 19th-century Americanist. An English PhD, she consulted on language and style for startups such as Medium and Delicious Monster before becoming the first user experience writer at Evernote. She now leads narrative UX at Stellar.org in San Francisco.



Kate Kiefer Lee

Kate Kiefer Lee leads the content and communications team at MailChimp. She's a former magazine editor and coauthor of the book *Nicely Said: Writing for the Web With Style and Purpose*. She's slowly but surely working on a master's degree in strategic communications. Kate lives in Atlanta with her husband, Andrew, and dog, Leon.



Eric Meyer

Eric A. Meyer is a writer, coder, occasional teacher, and amateur designer who co-founded An Event Apart and contributed to the development of CSS, microformats, and the web standards movement. He lives with his family in Cleveland, Ohio, and serves as technical lead for Rebecca's Gift.



Heather Ryan

Heather Ryan is an Assistant Professor at the University of Denver's Library and Information Science program. Her PhD is from the University of North Carolina at Chapel Hill in Information and Library Science, and she focuses her teaching and research on archives and digital preservation. She has been a Long Now Foundation Research Associate since 2007.



ILLUSTRATORS

Josh Cochran

Eleanor Davis

Aisha Franz

Hedof / Rick Berkelmans

Sarah Mazetti

Roman Muradov

COLOPHON

Publisher

Andy McMillan

Editor in Chief

Lisa Sanchez

Copy Editor

Julie Steenson

Ebook Designer

Paulo Pereira

Cover Designer

Frank Chimero

Art Director

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